

THE BRITISH JOURNAL

OF

TUBERCULOSIS

Vol. VI.

January, 1912.

No. 1.

ORIGINAL ARTICLES.

MODERN METHODS OF CONSTRUCTING HOSPITALS FOR ADVANCED TUBERCULOUS CASES.

By THOMAS SPEES CARRINGTON,

M.D.,

Assistant Secretary of the National Association for the Study and Prevention of
Tuberculosis; Consulting Expert on Hospital Construction in the New
York State Board of Health; Author of "Tuberculosis Hospital
and Sanatorium Construction."

THE rapid growth of public opinion in regard to the necessity of caring for and isolating the advanced tuberculous patient, and the growing belief that the spread of tuberculosis cannot be checked without the removal of advanced cases from the homes of the poor and ignorant, has led, during the past two years, to the construction of a continually increasing number of buildings designed to house the entire institution under one roof.

It is claimed for this style of construction that it is possible to economize on the installation of plumbing, heating, and administrative arrangements, that it concentrates the work, and is particularly suited for town and city requirements. Where property is valuable and a site cannot usually be obtained at a reasonable cost for the erection of the pavilion type of hospital, a one-story lean-to, or cottages scattered over a large area of ground, the class here described offers many advantages.

VOL. VI.

I

General Considerations.

The buildings which I propose to refer to in this article may be used for housing either incipient or advanced cases of tuberculosis, and are planned and constructed on lines conforming in many ways to the needs of a general hospital.¹ As they are intended usually for the service of small communities, and are often placed on the outskirts of, or even within the limits of, towns or cities, the site selected should be near to the line of an electric car system, with enough land around to allow of the free circulation of air on all sides of the building. Two entrances should be provided when possible: one for the staff, patients and their friends, and the other for tradesmen and service.

In designing these buildings there should be provided, for all advanced cases, single bedrooms or rooms with not more than two beds in each, and for incipient cases small wards of not more than six patients, or rooms for two patients in each. Every patient housed under the main roof should have not less than 2,000 cubic feet of air space, and a porch area 8 feet wide by 10 feet deep, or at least large enough for a bed, reclining chair, and table.

As provision for fire protection is compulsory in many cities, it is suggested that reinforced concrete, brick, terra-cotta or concrete tile construction with reinforced concrete floors should be adopted where possible, as buildings of this type are practically non-combustible. The structure should be wired for bells or telephonic communication when it is wired for lighting, as bell-calls or telephones should be installed in all rooms to be used by patients. The walls and ceilings should be finished in hard plaster, painted and varnished. The corners and the wall angles at the ceiling and floor should be rounded. Light colours may be used on the walls instead of a dead white; in fact, a harmonious colour scheme throughout the entire building is an advantage, and offers one of the means whereby we may make patients happy and contented. A ventilating system is not necessary in these buildings. All the wall space possible should be used for windows. The floors of the interior, except the toilets, baths, laundry, and kitchen, should be of hard wood, treated with oil and wax, or formed of ordinary narrow board flooring, covered with battleship linoleum. Other floors which come in contact with an unusual amount of water should be of terrazzo, cement, tile, or one of the patent composition materials now used for floorings. All the doors and passage-ways should be wide enough for the easy rolling of the beds through them

¹ For full details regarding the establishment of habitations for tuberculous patients, reference should be made to Dr. Carrington's recently published work on "Tuberculosis Hospital and Sanatorium Construction," which has been written for the National Association for the Study and Prevention of Tuberculosis, 105 East Twenty-second Street, New York City.—EDITOR B. J. T.

HOSPITALS FOR ADVANCED TUBERCULOSIS 3

—that is, they must be not less than 3 feet 6 inches wide. There should be no door-sills or panels in the doors, and all the interior finish around them and the windows should be placed flush, so as not to produce projections or corners which will catch the dust. The building should be constructed on such sanitary principles as are laid down for general hospitals. The rooms for advanced cases and all the porches should be screened with wire netting, arranged so that it can be removed during the cold weather.

The building should contain, for administrative purposes, the following rooms :

Dining-room for patients.	Superintendent's quarters.
Dining-room for staff.	Physician's quarters.
Dining-room for servants.	Nurses' quarters.
Kitchen.	Servants' quarters.
Diet kitchens.	Sewing-room.
Bakery.	Linen-room.
Serving-room.	Store-rooms.
Dish closet.	Sink-rooms.
Cold storage.	Bath-rooms.
Physician's office.	Toilets.
Special treatment room.	Laundry.
Waiting-room.	Disinfecting-room.
Laboratory.	Crematory.
Drug-room.	Morgue.
Business office.	Autopsy-room.
Sitting-room.	Heating-plant.
Library.	Workshop.

Reference may now be made to a few of the special features which can be seen at some of the newer institutions established in the United States of America and Canada for tuberculous patients.

The Lady Grey Hospital, Ottawa, Canada.

This building was erected by the Ottawa Anti-Tuberculosis Association, and furnished by the Daughters of the Empire. It was then handed over as a gift for the people, to be maintained by the city. It is situated within the western limits of Ottawa, on an elevated site with sloping ground, beside a beautiful grove of mature maples forming a little park, and having seats and hammocks in the shade, for the patients during the hot days of summer.

The building is a three-story structure with a large basement constructed of hard local red brick, laid in white mortar, on a concrete foundation, with Indiana limestone trimmings, following closely the modern English residential style of architecture. It faces south-west, and has a number of large verandas screened by wire against insects, which open into the different wards by wide doors through which the beds are wheeled. The main front of the building

4 THE BRITISH JOURNAL OF TUBERCULOSIS

is 130 feet long by 45 feet wide, and the rear extension is 41 feet deep by 21 feet wide.

The basement contains a laundry, 22 feet wide by 20 feet deep; drying-room, 10 feet wide by 8 feet deep; laboratory, 12 feet wide by 14 feet deep; storage for furnace coal, 20 feet wide by 12 feet deep;

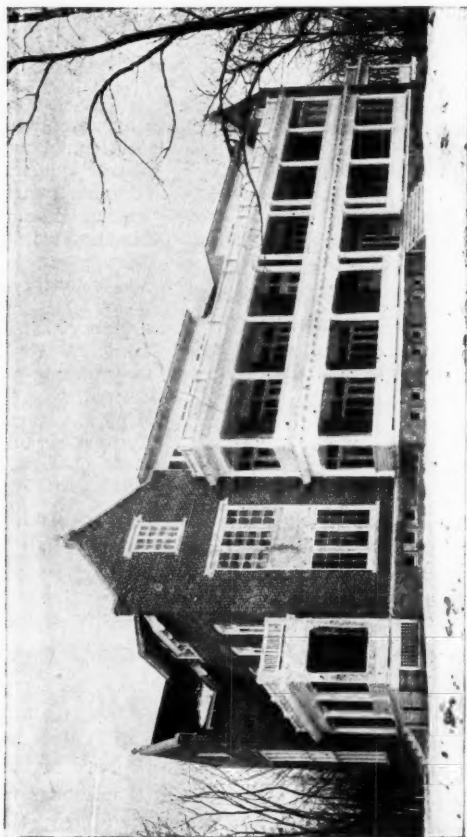


FIG. 1.—LADY GREY HOSPITAL, OTTAWA, CANADA : VIEW OF FRONT ELEVATION.

furnace-room for two boilers for the heating plant, 12 feet wide by 20 feet deep; and a room for elevator machinery, 6 feet wide by 8 feet deep.

The main portion of the first floor is divided through its entire length by a corridor, 8 feet 6 inches wide, having on the front a veranda, 72 feet long by 12 feet wide. Between the veranda and the

corridor are six single rooms, 10 feet wide by 12 feet deep, and at each end of the corridor on the front are two wards of the same size, 18 feet wide by 18 feet deep, for three patients each, with a small veranda extending out from them at the sides of the building, the one on the right being 8 feet wide by 22 feet long, and the one on the left 10 feet wide by 14 feet long.

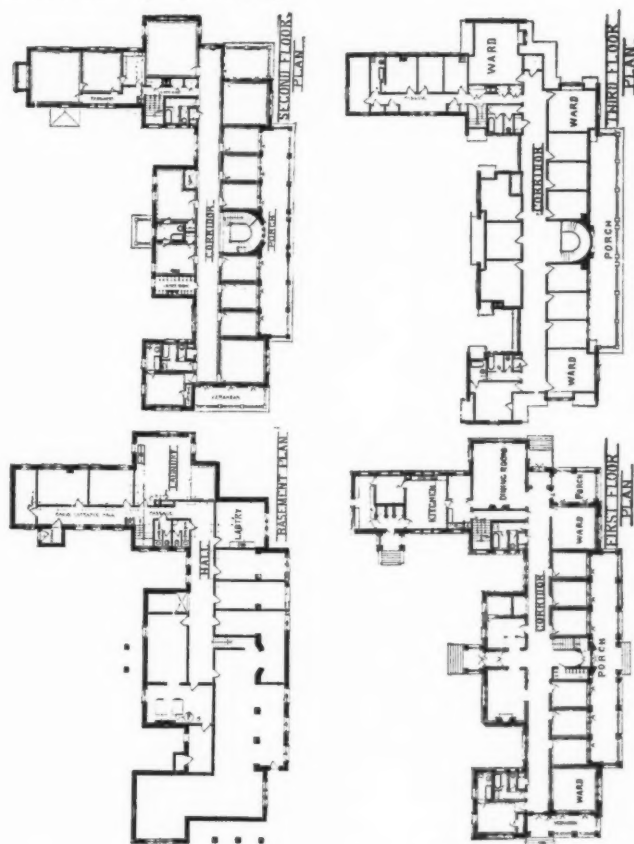


FIG. 2.—LADY GREY HOSPITAL, OTTAWA, CANADA: FLOOR PLANS. CAPACITY, FORTY-FIVE PATIENTS; COST, \$60,000.

The entrance-hall is in the centre of the building, 14 feet wide by 15 feet deep, with the main stairway leading up on one side, and a locker-room on the other. Opening on the rear of the corridor is the patients' dining-room, 22 feet wide by 20 feet deep; a doctor's office, 10 feet wide by 14 feet deep; an examination-room, 6 feet wide by 8 feet deep; a parlour, 16 feet wide by 12 feet deep; a nurses' room,

6 THE BRITISH JOURNAL OF TUBERCULOSIS

10 feet wide by 14 feet deep ; and toilets and baths for both men and women. In the rear extension on the right of the building, back of the dining-room, is a kitchen, 22 feet wide by 14 feet deep ; servants' dining-room, 10 feet wide by 10 feet deep ; serving-room, pantry, refrigerator-room, and store-rooms.

The second floor is arranged in the same way as the first, with verandas on the front and sides of the same dimensions, six single rooms and two wards in front of a corridor running the entire length of the building, and in its rear a large ward over the dining-room, 22 feet wide by 20 feet deep ; toilet and baths for women and men ; a matron's room, 14 feet wide by 18 feet deep ; two nurses' rooms, 14 feet wide by 12 feet deep ; and a locker-room for patients. In the extension is a diet kitchen, 9 feet wide by 6 feet deep ; a nurses' dining-room, 14 feet wide by 13 feet deep ; a nurses' sitting-room, 21 feet wide by 21 feet deep ; and a small hall, 3 feet wide, running into the main corridor at a right angle.

The third floor also has the same general arrangement planned for the lower floors, except that there are no side-verandas, and the extension is divided into bedrooms and a toilet for the servants. The building has a capacity for forty-five patients, is heated by steam, has an elevator and dumb waiters, and cost \$60,000.

Lake Edward Sanatorium, Lake Edward, Province of Quebec, Canada.

This building is placed on a stone foundation 2 feet thick, and is of frame construction, with a shingled exterior. In order to protect the interior from cold as much as possible, the walls are constructed, in layers from the outside in, as follows : Shingles, paper, siding, paper, siding, studs, wooden lath, plaster. The floors are hard wood throughout. All patients are provided with porch space, and can be wheeled from their rooms to the veranda assigned to them.

The building is 87 feet long by 25 feet wide, with two extensions in the rear, one 28 feet wide by 19 feet deep, and the other 28 feet wide by 54 feet deep ; each porch was designed as a loggia, and is a part of the structure under the main roof.

The first floor of the main section is divided as follows : Beginning on the left of the illustration, first a loggia, called the "west porch," 19 feet wide by 10 feet deep ; then a patients' room, 9 feet wide by 12 feet deep ; an office, 9 feet wide by 12 feet deep ; a living-room, 23 feet wide by 12 feet deep (from which extends in front a loggia, or the "south porch," 24 feet wide by 11 feet deep) ; a drug-room, 9 feet wide by 12 feet deep ; a medical office, 9 feet wide by 12 feet deep ; and a loggia (the "east porch"), 19 feet wide by 10 feet deep. At the rear of these apartments is a corridor, 6 feet wide, connecting the

two corner porches, and behind it is the main entrance and stairway to the second floor; a men's toilet, 9 feet wide by 4 feet deep; and two alcoves, 9 feet wide by 4 feet deep.

On the west end of the building in the rear is the smaller extension, divided down the centre by a hall 4 feet wide, opening into the

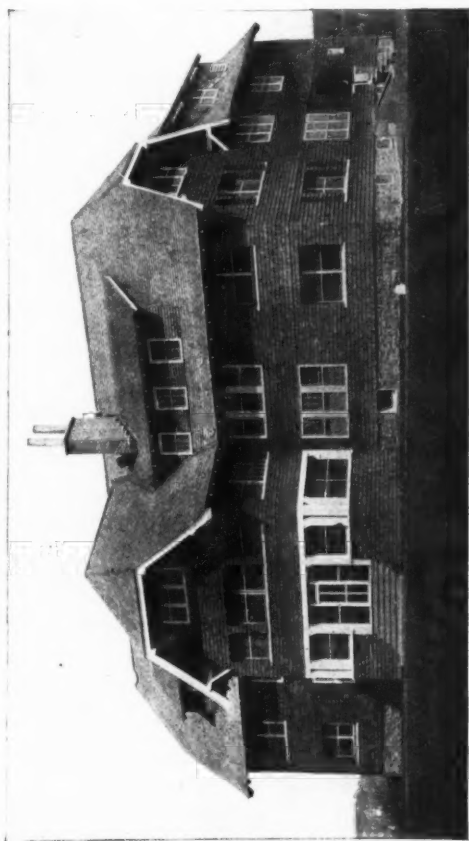


FIG. 3.—LAKE EDWARD SANATORIUM, LAKE EDWARD, PROVINCE OF QUEBEC, CANADA:
VIEW OF FRONT AND SIDE ELEVATION.

main corridor. On one side of the passage are two patients' rooms, one 10 feet wide by 12 feet deep, the other 9 feet wide by 12 feet deep, and a linen-room. On the other side is a coat-room, 9 feet wide by 7 feet deep; a bath-room, 5 feet wide by 10 feet deep; a locker-room, 5 feet wide by 10 feet deep; and the toilet-room for women, 5 feet wide by 8 feet deep.

8 THE BRITISH JOURNAL OF TUBERCULOSIS

In the extension on the east of the building is a dining-room, 14 feet wide by 23 feet long; a pantry, 11 feet wide by 15 feet long; a kitchen, 15 feet wide by 18 feet long; a servants' loggia, or porch, 7 feet deep by 14 feet wide; a servants' sitting-room, 10 feet wide by 14 feet long; the service and cellar stairway, refrigerator and store room.



FIG. 4.—LAKE EDWARD SANATORIUM, LAKE EDWARD, PROVINCE OF QUEBEC, CANADA :
FLOOR PLANS. CAPACITY, TWENTY-SIX PATIENTS; COST, \$26,000.

On the second floor the building is divided by a corridor practically in the same way as on the first, with six rooms, each 9 feet wide by 12 feet deep, on the front for patients, and an east, west, and south loggia of the same dimensions as those on the first floor, the south porch being reached by a small hall, 4 feet wide, in the centre of the building. In the rear of the corridor is a small loggia on one side of

the main stairway, and a coat-room on the other. The west extension is divided into a bedroom and sitting-room for the superintendent, a nurses' sleeping-room, closets, toilets, baths, and a linen cupboard. The east extension is divided down the centre by a hall opening into the main corridor, with two rooms for patients, a store-room, maids' room, and a refrigerator-room, on one side, and a pantry, lockers, baths, and two maids' rooms, on the other.

The third floor has also the same general arrangement: Six single rooms for patients on the front, with a corridor in their rear; an east, west, and south loggia, all somewhat smaller than those on the floors below; two rooms for patients in the west and five in the east extension, together with baths, toilets, and lockers, placed at convenient points.

The building is a complete institution in itself, supplying each patient with an individual room. There is a heating plant in the cellar, and electricity is generated for lighting purposes on the premises. The capacity is twenty-six beds, housing all classes of patients, at a cost for construction of \$26,000, or \$1,000 per patient.

Plan for a Small Village or Town Sanatorium.

The accompanying illustration furnishes a design for a small tuberculosis hospital or sanatorium to house an entire plant under one roof. It has a capacity for fourteen patients, but the dormitory wings can be built two stories high and the number increased to twenty-four. It is an interesting and compact design for a small village or town institution housing incipient cases, and the floor plans can be adapted for advanced cases without greatly adding to the expense of construction, by increasing the length of the dormitory wings 8 feet and placing partitions between the beds. The first floor should be built of brick or reinforced concrete on a stone foundation, with a basement under the entire structure; the second-floor walls of stucco on metal lath, finished in colours or with dashed pebbles, and the roof of stained shingles. The building will be 100 feet along the front by 24 feet deep through the wings; the dormitories, 14 feet wide by 25 feet long; and the porches, 7 feet wide by 32 feet long. The front walls dividing the dormitories from the porches are constructed of pillars, with windows between, which can be pushed up out of the way, leaving the space entirely clear. There are also windows in the rear and side walls, giving good cross-ventilation. At the end of the dormitories, next to the central section of the building, are bath-rooms, toilet, and lockers, for the patients. The lockers are 3 feet wide by 3 feet deep, in order to give a small private space to each person.

The central section of the first floor is divided into a reading-room, 12 feet long by 12 feet wide; a dining-room, 17 feet long by 12 feet

wide ; a kitchen, 13 feet long by 14 feet wide ; and a pantry. The second floor contains two small wards for two patients each, and a nurses' apartment divided into a sitting-room, bedroom, and bath.

The entire building is to be heated by a steam plant in the cellar, and should be situated so that it can be connected with the city sewers and lighting service. The estimated cost is \$15,000.

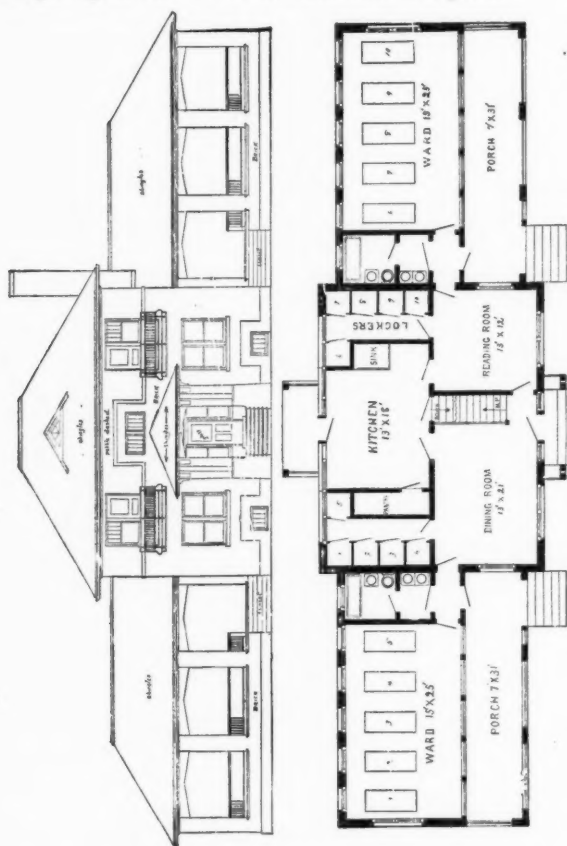


FIG. 5.—A DESIGN FOR A SMALL VILLAGE OR TOWN HOSPITAL OR SANATORIUM : FRONT ELEVATION AND FLOOR PLAN. CAPACITY, FOURTEEN PATIENTS; ESTIMATED COST, \$15,000.

Open-Air Provision for Advanced Cases.

An advanced-case hospital does not mean a home for incurables, for there can be no hard-and-fast line of demarcation drawn between curable and incurable cases. It has been found that many patients sent to institutions where they may be isolated until their death improve under good hygienic surroundings, and recover—at least, for

all practical purposes. It is the opinion of many authorities that the advanced case does better on a porch in the open air than in an enclosed room, and can stand with benefit a comparatively large amount of cold and exposure. It is therefore necessary that buildings for this purpose, besides being heated, and supplied with the comforts and conveniences of a general hospital, must also have large verandas

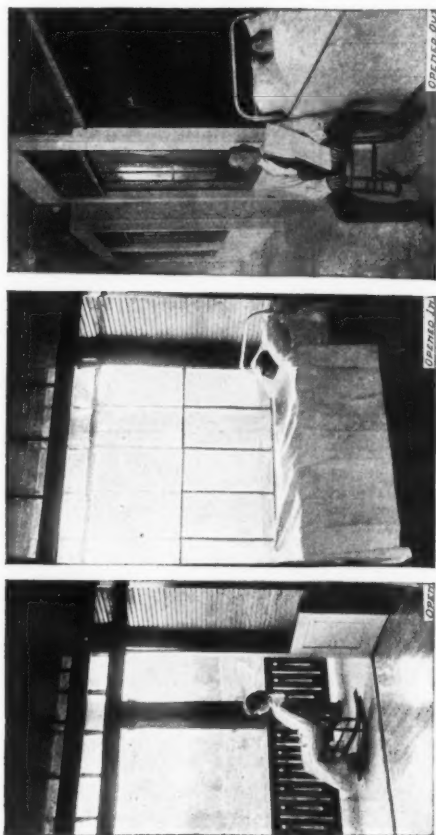


FIG. 6.—THE CONVERTIBLE SLEEPER: ARRANGEMENT FOR CONNECTING ROOMS WITH OPEN PORCHES.

connected with the wards and rooms by windows, cut down to the floor, and doors through which beds can be rolled, in order to provide the same facilities for the open-air treatment as is provided for incipient cases. Such porches should be used in pleasant weather by patients, even when far advanced in the disease, as there is hope for all, when they are not in a dying condition.

THE WORK OF THE ST. MARYLEBONE DISPENSARY FOR THE PREVENTION OF CONSUMPTION.

By HALLIDAY G. SUTHERLAND,

M.D.,

Medical Officer to the Dispensary.

IN common with the other anti-tuberculosis dispensaries in London, the aim of the St. Marylebone Dispensary for the Prevention of Consumption is the eradication of tuberculosis. This disease is



FIG. 1.—AN INFECTED HOME BEFORE COMING UNDER THE SUPERVISION OF THE ANTI-TUBERCULOSIS DISPENSARY.

preventable and curable, and yet every year over 50,000 lives are lost, and at a low estimate 150,000 more are disabled. The charge to the State in England and Wales alone in relieving the distress directly arising from consumption is one million sterling.

Principles and Methods of Work.

The chief sources of infection exist in the homes of the people, and it is here that the Dispensary seeks to attack the malady at its very source. To the Dispensary, which is free to all, patients who

are not already being advised or treated by a medical practitioner, may go for examination, diagnosis, and treatment. From the dispensary a physician and a nurse visit the homes of the patients, who are thus educated in open-air methods, and in the protection of others by the observance of a few simple hygienic precautions.

The Examination of Infected Homes.

The foregoing illustration provides a typical example of an infected home as seen before coming under the supervision of the



FIG. 2.—THE SAME HOME UNDER THE SUPERVISION OF THE ANTI-TUBERCULOSIS DISPENSARY.

staff of the Dispensary. Bad air, darkness, dirt, dust, and carelessness all favour the spread of tuberculosis (Fig. 1).

While in many areas structural reforms are indicated, and are slowly being carried out by the local authority, there is no question that the poorest home in the meanest slum can be rendered 100 per cent. more suited to health by the voluntary effort of the occupants (Fig. 2).

The Spread of Infection.

It is essential to remember that it is the ignorant or undiagnosed consumptive who is the source of infection at home or abroad; the educated consumptive is a danger to no one. In its earlier stages consumption is a curable disease, and for this reason the medical

officer examines all those who have been in contact with the patient, so that the early cases are diagnosed and cured, while they are yet curable, and this without interfering with their occupation. This routine examination of contacts has been called the "march past," and takes place either in the patient's home or at the Dispensary (Fig. 3).

The Dispensary System is a Co-related Effort.

From the Dispensary suitable cases are sent to various sanatoria for cure, advanced cases taken to special hospitals, and children cared

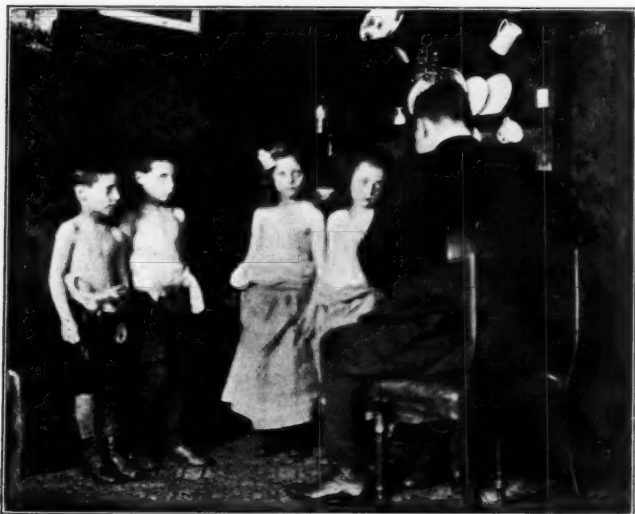


FIG. 3.—"THE MARCH PAST": CONTACTS BEING EXAMINED BY THE MEDICAL OFFICER IN A PATIENT'S HOME.

for and taught the value of fresh air and sunlight in an open-air school under the supervision of the Dispensary. In every department of its activity the Dispensary works in intimate association and co-operation with the Public Health Authority, and with the various charitable agencies in the borough. The Dispensary is the central bureau for the collection and dissemination of all information regarding tuberculosis, and the centre of all scientific and philanthropic effort against this disease. The following is a diagrammatic representation of the Dispensary system (Fig. 4):¹

¹ The diagram on p. 15 is here reproduced by kind permission of Dr. R. W. Philip.

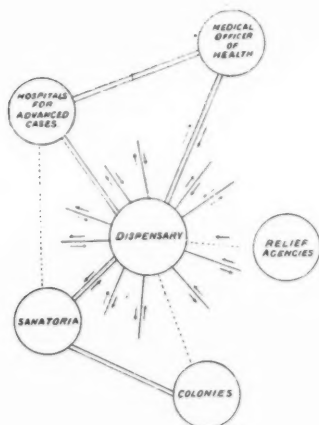


FIG. 4.—RELATIONSHIP OF DISPENSARY TO OTHER FACTORS IN THE ANTI-TUBERCULOSIS CAMPAIGN.

Continuous coupling lines = constant communication and transfer of patients; broken coupling lines = occasional transfer of patients; radiating lines = patients coming to and (or) searched out by the dispensary staff.

Open-Air Treatment.

As an example to the patients of what open-air treatment should be, the Dispensary has erected a Speedwell shelter in the garden (Fig. 5). This is occupied by a patient whose meals are provided by the local charitable society and by his friends.

Under the dispensary system, patients with advanced disease, living in homes where nursing is difficult and the danger of infection great, are urged to enter such hospitals in their own interest.

An Open-Air School.

A considerable portion of the clientèle of the Dispensary are children of school age, and as it was found that these made little or no progress while attending the ordinary schools, a special open-air school was started by the Dispensary. The children spend the whole day in Regent's Park, dinners being provided by their parents. The school is very popular among both parents and children. At this school all the children repeat a simple *credo*, "I will never fear fresh air; I will always fear bad air; I will open the window and save my life!" (Fig. 6).

The Use of Tuberculin.

Tuberculin is an invaluable adjunct to treatment, and has been used at the St. Marylebone Dispensary since its opening both as a

diagnostic and therapeutic agent in selected cases. Excellent results have been obtained, but just as with sanatoria, so too with this agent, there has been a danger lest its utility be exaggerated. It is only of value in carefully selected cases, and, therefore, except in conjunction with the systematized work of the anti-tuberculosis dispensary, the tuberculosis problem cannot be solved by its use.

A School for Voluntary Workers.

Covering as it does a wide field of social and philanthropic effort, the Dispensary presents excellent opportunities for voluntary work of

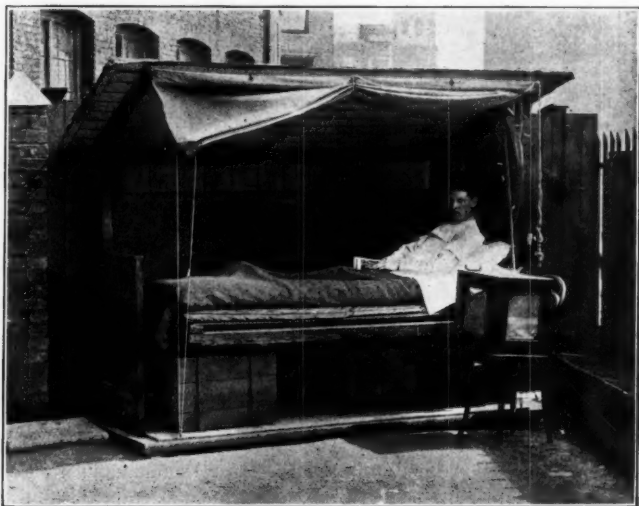


FIG. 5.—PATIENT IN SHELTER AT THE ST. MARYLEBONE DISPENSARY, 15, ALLSOP PLACE, N.W.

an interesting nature. Advice on household economy, care of infants, apprenticeship of children, special supervision of difficult homes, and assisting in the statistical work of the Dispensary, represent a few aspects of this branch of its activity.

The Dispensary is in intimate touch with the Charity Organization Society, the Portland Town Association, and other charitable agencies in the borough, to whom all cases for relief are referred;

Relation to Public Health Authority.

There is an intimate association and co-operation between the Dispensary and the Public Health Department. All cases are notified

to the Medical Officer of Health, who is also advised when special disinfection of a home is required—as on the death or removal of a patient. Further, the Medical Officer of Health notifies the Dispensary of all cases admitted to the Infirmary, so that their homes come under the supervision of the Dispensary; the contacts are examined, and the relatives have adopted precautionary measures before the patient returns. The Dispensary is also able to draw the attention of the Medical Officer of Health to insanitary conditions found in the homes.



FIG. 6.—OPEN-AIR SCHOOL.

The recent order of the Local Government Board authorizing Municipal Dispensaries will not affect the work in this borough, where it has been started on a voluntary basis.

Results.

The first Anti-Tuberculosis Dispensary was founded by Dr. R. W. Philip in Edinburgh, in 1887, in which city during the second decade when the activities of the Dispensary had extended to a Sanatorium and Hospital for advanced cases, there has been a fall of over 42 per cent. in the mortality from consumption, as against a fall of only 17 per cent. in London during the same period. Without claiming an absolute relation between cause and effect, there remains the fact that over 60 per cent. of all notifications of phthisis to the Public

Health Authority in Edinburgh come from the Dispensary, and there can be no question that this systematized attack on tuberculosis has largely contributed to the lowered mortality.

A full analysis of the work of the St. Marylebone Dispensary for the Prevention of Consumption is impossible until the Medical Officer's First Annual Report is published. The following figures refer to the work of the Dispensary during the first five months following its opening on November 22, 1910. It is to be remembered that the Dispensary was a new and unknown agency in the Borough :

Number of new patients who came to the Dispensary			
for examination and diagnosis	...	...	261
Total attendances, old and new	...	...	1,057
Number under treatment	...	...	159
Number of contacts examined by Medical Officer	...	...	211
Visits of Medical Officer	...	...	355
Domiciliary visits by nurse	...	...	982

The Dispensary method of attacking consumption has been adopted in Berlin, in Durban, and in the great Transatlantic cities of Montreal, New York, Boston, and Pittsburg. It has received the official approval of the Government of the Netherlands, and of the Local Government Board of Scotland. In London Anti-Tuberculosis Dispensaries have been established in the Boroughs of Paddington, North Kensington, St. Marylebone, Stepney, Bermondsey, Battersea, and Fulham.

In view of the rapid extension of the Dispensary system, a Central Committee has been formed in London, from whom an appeal for £100,000 has been issued. It is proposed to stimulate, and where necessary to subsidize local effort, and also to prevent any possible divergence from sound and established lines.

This system can place treatment within the reach of every consumptive in this country, but its final claim is the total eradication of this disease during the present century. Such an outlook has placed it in the first rank of the social and philanthropic effort of this generation.

The Dispensary is entirely supported by voluntary subscriptions, and a sum of at least £1,000 a year is required to maintain its work.

THE STUDY OF TUBERCULOSIS IN CHILDREN.

By WOODS HUTCHINSON,

A.M., M.D.,

Author of "Preventable Diseases," etc.

WHILE our knowledge of this subject is fairly extensive, our ignorance is equally so, and far more profound. We are more deeply impressed with what we do not know about it than we were twenty years ago. The principal purpose of this communication is to call attention to the gaps in our knowledge, and to suggest lines along which clinicians, pathologists, and the founders of sanatoria, may co-operate to fill them.

Briefly, the three great needs for the further growth of knowledge in regard to tuberculosis in children seem to me to be :

First, to wipe completely off our diagnostic slate the old clinical picture of pulmonary tuberculosis, based upon a group of symptoms presented in the adult, and the careful redrawing of an almost entirely new picture of the disease as it presents itself in childhood.

Second, a wide and systematic study, with the most thorough modern methods of diagnosis, not merely of children who to the dull eye of their immediate family are obviously sufficiently ill to be brought to a dispensary or hospital, or even a private physician, but of all children who have been known to have been exposed to infection in the house or family, and all large bodies of children in schools and institutions who are not especially under suspicion of infection.

Third, the establishment of sanatoria or camps for the reception and treatment of children suffering from pulmonary tuberculosis. At present these are practically non-existent. Neither our treatment nor our knowledge of the disease can hope to become effective and adequate unless we have an opportunity of studying large numbers of cases together under conditions suitable for adequate control and observation. The value of the sanatorium as a means of increasing our knowledge of tuberculosis has been even greater than its curative influence.

Ancient Views.

The amount of work done and the masses of data accumulated upon this subject are something enormous. But it would probably be fair to say that the chief net result of their accumulation so far, and probably their most useful, has been to make us doubt the

correctness of our previous views. And the process is still continuing. Half a century ago we felt fairly confident that, while the pulmonary form of tuberculosis was both the commonest and the most frequent cause of death in adults, this was not the case in children; but that, on the contrary, certain other organs and groups of tissues were more frequently the site of the disease—notably the lymph glands, the bones and joints, and the meninges. Tuberculosis was, in fact, regarded as a generalized disease in children and a localized one in adults. Most of the older textbooks flatly state that pulmonary tuberculosis is rare in children under the age of ten, or even as late as fifteen years. And even as recently as the last United States census and the mortality reports of the New York City Board of Health, we find the mortality from the pulmonary form of tuberculosis in children far outranked by the osseous, the meningeal, and even the intestinal.

Indeed, so far as statistics based upon mortality records are concerned, all over the world to-day, pulmonary tuberculosis would appear to be one of the least frequent forms of fatal tuberculosis in children. So universally is this apparent condition accepted as a fact that it gives rise to some of the most extraordinary misunderstandings. As, for instance, when so distinguished and eminent a statistician as Professor Karl Pearson, in his recent admirable work upon the inheritance of pulmonary tuberculosis, explains the discrepancy between two groups of percentages of tuberculosis by the statement that one of them contained a large number of children under the age of fifteen, "in which period consumption is extremely rare."

Modern Views.

With the discovery of the bacillus and the succeeding demonstration of the tuberculous nature of the old "struma" and "scrofulous" group of lesions of the skin and bones, the special tendency of tuberculosis to localize in these structures in children seemed strikingly corroborated. But in the meantime other data were accumulating which were destined to seriously undermine it. This was the accumulation of thorough and systematic post-mortem examinations of the bodies of children dead of all sorts of diseases. So long as these examinations merely confined themselves to ascertaining the probable cause of death, comparatively little progress was made. But when the practice was once established of thoroughly and systematically examining every organ and important tissue of the body with reference to the possible presence of tuberculosis, then a very different state of affairs began to reveal itself. Instead of the lung being the least frequently affected organ, it was found to be the

THE STUDY OF TUBERCULOSIS IN CHILDREN 21

most so. What made these results the more interesting and the more unexpected was that many of them were carried out in the attempt, which is still persisting, to discover through the localization of these lesions the port of entry and probable source of the infection. Those observers who are inclined to believe that the infection in tuberculosis came chiefly through ingestion were specially interested in involvements of the intestines and of the mesenteric glands. But however few or numerous these might be found to be, they were always well below the lungs in frequency of involvement.

In fact, the more thorough and systematic these examinations were made, and the more frequently inoculation tests were included, the more nearly universal became the degree of pulmonary involvement, until some of the later data, like those of Emmet Holt, record as high as 93 per cent. of pulmonary lesions. Adams, of the Washington Hospital for Children, gives 90 per cent. of lung and bronchial involvement, while in Holt's 119 cases under three years the lungs were affected in 99 per cent. and the bronchial lymph nodes in 96 per cent.

Statistical Considerations.

Almost equally striking is the change that has come over our reports of the percentage of tuberculous lesions in the children admitted to our clinics and pediatric hospitals. As recently as five years ago these percentages ranged from half of 1 per cent. to 2 per cent., 3 per cent., or occasionally as high as 6 per cent. Now the proportion of cases of tuberculosis admitted to children's hospitals has reached 25 per cent., 30 per cent., and 35 per cent. Indeed, Holt's latest reports give 41 per cent.—and the end is not yet. These increasing percentages—due entirely to a more adequate knowledge of the disease, more thorough examinations, and consequently greater accuracy of diagnoses—furnish at least a part of the basis for the claim frequently advanced that tuberculosis is increasing in frequency in young children, while diminishing at every other age.

In fine, all the data at our disposal point clearly to the fact that tuberculosis of all varieties is vastly more common in young children—at all events young children in the hospital classes—than was previously believed;¹ and while they do not as yet appear to have thrown much light upon the precise source of infection, whether human or bovine, inhalation or ingestion, yet they do justify us in regarding the question of infection as in large measure a problem of infancy and early childhood. If we can control the spread and development of tuberculosis

¹ See articles in "Tuberculosis in Infancy and Childhood," edited by T. N. Kelynack, M.D. London: Baillière, Tindall and Cox, 8, Henrietta Street, Covent Garden, 1908.

during the first five years of life we can control its entire progress in the community. As certain of our great religious schools used to say, "Give us the teaching of a child until ten years of age, and we care not who attempts to mould him after that." We are almost prepared to say that, given an ideal environment up to the tenth year, and we can go far to guarantee the child against the development of tuberculosis in later life—eight cases out of ten.

An exceedingly interesting and valuable contribution to the study of this problem has recently been made by the various dispensaries for the care of tuberculosis in several of the larger American cities, by extending the study of the tuberculous individual so as to include the members of his or her family. Wherever it is feasible, the nurse attached to such a dispensary visits the patients in their homes, and makes inquiries as to the existence and number of children in the family. If any are present, they are brought into the clinic, regardless of their apparent condition of health, to be carefully and thoroughly examined for the presence of tuberculosis in any form. The results are little short of appalling, showing that from 20 per cent. to as high as 50 per cent. of all the children of tuberculous parents thus brought in for examination are suffering from the disease in some form, the general average being in the neighbourhood of 30 per cent. The better the opportunities, and the more careful and exhaustive the examination and testing, the higher the percentage discovered.

I am greatly indebted to the chiefs of several dispensaries engaged in this work in New York for furnishing me with their data, so far as tabulated, especially Dr. Miller and Dr. Woodruff, of the Bellevue Tuberculosis Dispensary.

Clinical Experience.

I have also visited most of the hospitals and institutions in and near New York which are devoted to the care of tuberculous children. These, unfortunately, though not unnaturally, in view of our lateness in the recognition of the occurrence of pulmonary tuberculosis in children, are chiefly limited to cases of bone, joint, and glandular tuberculosis. Indeed, only one in all this array will admit children suffering from pulmonary lesions, on account of the danger of infection.

The experience of the physicians in the orthopædic hospitals and wards is almost unanimous, and in accord with the views generally held by the profession and the textbooks. The children suffering from joint and bone tuberculosis comparatively seldom show definite or progressive lesions in the lung. If such lesions be present, they are in a comparatively dormant or recessive stage; and in the

THE STUDY OF TUBERCULOSIS IN CHILDREN 23

majority of instances do not progress, but clear up and disappear under the treatment, *pari passu* with the improvement of the bone and joint.

On the other hand, the results of Dr. Miller's and Dr. Woodruff's exceedingly careful and painstaking study of the children of tuberculous parents show, first, that of those affected the disease was present in 51 per cent., but that in only 1 per cent. did it occur in the bones or the joints; while 71 per cent. presented definite pulmonary signs, and 20 per cent. more gave a history of a cough.

Secondly, instead of the glandular form of the disease being an earlier stage, the precedent of a pulmonary inflammation, though enlarged glands were present in 79 out of the 150 cases, only a little over half of these could be shown to be tuberculous, and the majority of them had pulmonary involvement as well. These unexpected findings suggest that the pulmonary lesion was the primary in both articular and glandular tuberculosis.

Thirdly, in the other group of glandular bodies supposed to be closely associated with tuberculosis as ports of entry, if in no other way—hypertrophied tonsils and adenoids—the connection is even less positive. Sixty-five out of the 150 cases had hypertrophied tonsils and adenoid growths. Out of this number only thirty-one, or 47 per cent., were considered tuberculous, as compared with 51 per cent. of the entire number which gave positive reactions. In other words, instead of a larger percentage of those having adenoids giving evidence of tuberculosis, a smaller percentage than the average did so.

Finally, thorough careful physical examination of the lungs and chest have gone far to establish a new clinical picture for pulmonary tuberculosis in children, with the most frequent and significant local lesions not in the apices, but in the neighbourhood of the nipples, below and slightly external to them, and more frequently in the left lung, instead of in the right, as in the adult.

Dr. Charlton Wallace's painstaking study of 400 cases of tubercular hip-joint disease shows that over 70 per cent. were members—often the only survivors—of tuberculous families or had lived in rooms and houses in which deaths from tuberculosis, or cases of the disease had occurred within a year.

General Conclusions.

To sum up, the data so far collected appear to point towards the following conclusions as probable: *First*, that the frequency of pulmonary tuberculosis in children is much greater than was formerly supposed. *Second*, that the lung is the most frequent site of tubercular involvement in children, as in adults. *Third*, that whatever the port of entry, the lung suffers most severely, as well as most frequently.

Fourth, that instead of pulmonary tuberculosis having a special preference for the bones, joints, and glands in childhood, the tuberculous process in these regions and tissues would appear to be secondary to the involvement of the lung, and to represent a residual stage of a generalized infection. *Fifth*, that even the glandular forms of tuberculosis do not represent an earlier or milder form of the infection, but are secondary to a pulmonary involvement. *Sixth*, that the moderate but appreciable degree of immunity against pulmonary tuberculosis possessed by children who have manifested osseous, articular, or glandular forms of the disease is possibly to be interpreted on the theory that they have already survived a considerable degree of pulmonary involvement. *Seventh*, that such immunity as may be acquired by civilized races is probably like the immunity of the negro races to malaria, the result of the survival of attacks of the pulmonary form of the disease in childhood.

SYSTEMATIC EXAMINATION OF EMPLOYEES FOR TUBERCULOSIS.

By THEODORE B. SACHS,

M.D.,

Chairman of the Advisory Committee on Factories of the Chicago
Tuberculosis Institute.

PERIODIC examination of machinery is a part of the business policy of all well-managed establishments. Serious damage, or even total destruction, results from neglect of timely repair. Entailment of a small expense to-day means prevention of a larger expense, or possibly of total loss, to-morrow. This policy of periodic examination, intended to stop leaks, to repair slight damage, to prevent irreparable deterioration, is applicable at present to all "inanimate" machinery. "Human" machinery is just beginning to receive the gradually increasing proportion of attention due to it.

It is readily understood that knowledge of the physical condition of a worker is of great importance to the employer, as health is a factor in determining productive efficiency. The period of usefulness of employees is lengthened through a system of examinations designed for detection of breaks in their physical condition, and a policy of extension of leaves of absence at a time when "repair" is possible. It is in the interest of every business man to take stock of the health of his employees, if for no other reason than for the determination of their

working capacity and prevention of total disability, which results in the loss of tried and experienced men.

In the detection of no other disease does the economic gain to the employer from this procedure stand out as prominently as in the case of pulmonary tuberculosis, with its gradual and at first imperceptible impairment of the productive capacity of the worker. The early detection of this disease in an employee is of great importance to himself, and also to his co-workers and his employer.

The chance of ultimate "cure" or "arrest," as well as restoration of the working capacity, gradually diminishes with the growth of the disease. The possibility of infecting others grows with the gradual transformation of a "closed" incipient lesion into an "open" one, with its swarm of tubercle bacilli in the sputum. The interests of the employer are alike vitally affected by the gradual diminution of the productive capacity of a tuberculous employee and of those subsequently infected.

These considerations call for a system of medical examinations of employees in all working-places, as a necessary measure for the protection of all concerned. The expense entailed in the maintenance of such examinations is far outbalanced by the benefits derived.

It is highly desirable that *all* employees should be examined for traces of tuberculosis, and it is possible that, with the present tendencies in our system of government, the State may eventually make provision for this purpose. Until then, however, the interests of the employer necessitate the conduct of such examinations at his own expense.

To test for evidences of tuberculosis every applicant for a position would entail a considerable outlay of money, though in a number of manufacturing and commercial establishments a large percentage of employees are given at present a thorough medical examination before their admission to those benevolent associations which are connected with their work.

In Chicago, numerous firms provide general medical service for attendance on employees falling sick during their term of employment. Special attention is given to tuberculosis in the shops of Sears, Roebuck and Co., Montgomery, Ward and Co., and the International Harvester Company, three firms well known for their welfare work among employees. These firms have built and maintain special cottages for their employees at the Edward Sanatorium, Naperville, Illinois.

The great prevalence of tuberculosis among working people makes it highly desirable, however, that special medical provision should be organized in large concerns for the early detection of this disease.

To round up every possible case of tuberculosis, without going to the extent of examination of every employee, the following method was proposed to the International Harvester Company, which employs

about 20,000 workers in the city of Chicago. A list of suspected cases is to be prepared by a special tuberculosis nurse, who has the co-operation of the foreman in charge of various factories of the company, the list to include the following groups of cases: (1) Employees in whom the diagnosis of tuberculosis has been previously made; (2) employees in whom poor general condition in connection with other suspicious symptoms suggests the presence of tuberculous disease; (3) employees with histories of protracted cough and expectoration; (4) employees in whose families a case of tuberculosis exists, or death has occurred from this disease; etc.

With the compilation of such a list of suspected cases, a special tuberculosis clinic can be inaugurated for the benefit of the employees of the company. This plan was first submitted to the Executive Committee of the Chicago Tuberculosis Institute, and on their approval adopted by the International Harvester Company. Dr. James A. Britton, of this city, and Miss Jane Flanagan, a tuberculosis nurse until recently on the staff of the Chicago Municipal Sanatorium, were placed by the International Harvester Company in charge of the proposed clinic. Beginning with the above-mentioned groups of cases, the system of examination for tuberculosis is to extend gradually to all suspicious cases.

With the inauguration of this first industrial tuberculosis clinic, the Chicago Tuberculosis Institute appointed a special Advisory Committee on Factories, consisting of Dr. Henry B. Favill, Mr. Sherman C. Kingsley, and Dr. Theodore B. Sachs. This committee is to act in advisory relation to the clinic, and has for its purpose the extension of similar provisions to other manufacturing and commercial establishments.

It is agreed that a case of tuberculosis in a working-place should not remain unrecognized, and cannot be permitted to continue uncontrolled. Knowledge of the actual conditions in reference to tuberculosis among their own workers is bound to enlist the active participation of employers of labour in the present crusade against the White Plague, and, we are fully convinced, is destined to improve the entire situation.

AN EVENING AT A SANATORIUM.¹

By J. M. MASON,

M.D., F.C.S., D.P.H. CAMB.,

Barrister-at-Law.

"Miss N. will open our evening's entertainment with the piano." Open to the four winds of heaven was the room, and the stars shone brightly. The moon looked down on bush-clad mountains, where dusky Maori warrior was wont to deploy. "Peace has her heroes no less than war." Save for the chairman and the white-frocked nurses, there were none there but had daily tussles with that "grim old man with the scythe." Young man, maiden, elderly women, and grey-haired men—not one but had suffered more or less from that mighty atom "King Tubercle." The electric lights show but little in the vast open-air concert-room; the few bulbs pale in contrast with the brightness of the Southern stars. Loud applause greets the curly-haired, barefooted pianist as she touches the keys; eyes sparkle and hands beat time as the homely strain of "Killarney" breaks the silence. Mary is eighteen years of age only, but four of these have been spent in sickness. Little of sorrow there seems now as she runs her hands over the keys. Voices more or less musical take up the chorus, "By Killarney's lakes and fells"—lakes and fells which some have seen and never will see again; woods and dells which some will never see: yet there is no sign or evidence of sadness. The next performer, with now and then a stop for breath, tells how "Life is sweet when youth is at the prow." Barefooted, tanned with constant exposure to sun and wind, she has left her home, husband, and children, to win back health more for their sakes than for her own at this open-air sanatorium. Her black dress relieved only by a dainty white scarf, which is thrown in graceful folds round her neck, she battles bravely with the high notes, "Life was all a dream." Life to her has been far from that. It has been for many years a hard fight with disease and ill-health, but now all that is forgotten and behind her—"Life is all a dream." "Alas! those chimes so softly stealing" rises up clear, full, and rotund, fills the room, and wanders over the mountain-tops, waking the "weka" (Maori hen) in her slumber. The deer lift their heads in astonishment, but nothing of danger lurks in the sound, and they quietly resume their browsing. What would these "first-nighters" think if they saw their idol rotund—for she has put

¹ This sketch is an attempt to give some idea of an evening's entertainment at one of our New Zealand Sanatoria for Consumptives.—J. M. MASON, Aitken Street, Wellington, New Zealand.

on some three stones in weight—barefooted, brown, painted by sun where grease paints were wont to play their part? Three and a half years ago she left the stage, ceased to mimic sorrow, laid aside her short skirts, her fantastic costumes, for a bed of sickness—put away her gipsy cap and tambourine; and now after a year's sojourn in this haven of health she still can troll, "I have a song to sing, oh!" Truly it is sung to the moon. Brought upon a stretcher paid for, I am glad to say, by the gilded youths who were wont to bask in her smiles, she is ready almost to delight them again with, "Only a penny, one little D." Face to face with the "grim reaper," she has learned other songs, and, in answer to the enthusiastic encore, she tells, in tones which speak of skilful training, of "Mansions of the blest." But everything is not in this minor key. Evidently the humorist of the colony is the tall, gaunt Irishman, now called upon to do something. Privileged is he as well as ill, for he dares to whet his wit on the chairman. His sallies, his wit—ay, even his deep inspirations and his coughs are looked upon as witticisms of the first order—and the audience cheer and laugh as never did Tivoli crowds. He is indeed a humorist, for who other could translate his breathlessness into fun? He tells in halting notes of "Hogan's goat," "And he ain't dead yet." There is something of quietness when he tells of the method in which the Jew, Italian, Frenchman, try to get past St. Peter into Paradise, but everything of this is forgotten when he describes how the artful Irishman outwits the guardian of the portals, and *locks* St. Peter out.

For twenty minutes or more the chairman has them laughing with his funny stories, here and there blending instruction, hope, and caution, with his talk, because he is there to guide as well as amuse.

"My gay barque goes before the seas, oh! oh! oh!" Clear and full are the notes of the singer, who needs no accompaniment. Down to Jimmie and Alice, the four- and three-year-old members of the audience, does the desire for more reach, and in fine style does the baritone voice of the singer answer with "Sancta Maria."

And now comes Jimmie himself with a recitation, which, judging from the stage asides, has been learned from the actress: not one of the audience to cavil at the formality—or shall we say cheekiness?—of the lad, because, have they not seen all the rehearsals?

A warm favourite, surely, is Josephine, who can imitate marvellously both female and male, and her "I've got my eyes on you-oo-oo" finds an echo in everyone, and the chorus reaches far out into the starlight night.

A substantial supper of milk, cakes, and fruit sees the end of a most enjoyable evening. Surely a wonderful sight—gathered from all ends of the earth for one common object, to fight the greatest enemy of the Anglo-Saxon race! Music is in the air, and as the chairman walks

his last and lonely round he can hear in the darkness and stillness of the night, which wraps these poor souls in her arms, "When are you going to take that other boot off?" He had told them the old story of the nervous man who sought sleep often, but found it with difficulty: how the keeper of the house wanted the roisterer not to make a noise when he came home; how the late-to-bed forgot, and shied his boot across the floor, and then, remembering, carefully took off the other; how he was wakened by a knock some hours after, and, in answer to his "What's the matter?" his nervous neighbour yelled, "When are you going to take that other boot off?" Now and then a member of our little community coughs, and tries to still the noise by means of the bedclothes. Humour, kindness over all—all he gets for his effort to stay the tickling is, "When are you going to take that other boot off?"

Life here in our colony of sick ones is no more a dream than it is in the outside world, but, thank God! we can laugh at our infirmities sometimes. "For God's sake, man! take off that other boot and let me go to sleep." The cougher laughs. The Southern Cross sinks lower down. The night-birds call to each other, and soon we are all asleep.

CRITICAL REVIEWS.

THE TREATMENT OF PULMONARY TUBERCULOSIS AND HÆMOPTYSIS BY ARTIFICIAL PNEUMOTHORAX.

By CLAUDE LILLINGSTON,

M.B., B.C. CAMB.

TREATMENT of an inflamed area by immobilization has long been recognized as one of the most important factors in the arrest of disease, and splinting of the spine, the hip, or the knee for tuberculous disease is recognized as orthodox treatment. But splinting of lung-tissue, presenting as it does numerous difficulties and dangers, has, until recently, been regarded as a dangerous prank to play, and has been studiously neglected in this country, where many of the leading physicians have held up their hands in pious horror at such an invasion of their sphere of action. The physician's tardy resignation of the appendix and perforated gastric ulcer to the surgeon is, however, bound to be followed by his adoption of surgical treatment for certain phases of pulmonary disease. Particularly must this be the case in severe phthisis, which progresses in spite of all medicinal aid.

Of the many operations for phthisis, splinting a lung by the induction of an artificial pneumothorax is certainly the most effective, easy, and popular. It has been adopted by all the leading sanatoria on the Continent and in America; and in spite of its limitations, it has steadily grown in favour during the last decade.

Indications for the Production of Artificial Pneumothorax.

Extensive and active disease of one lung, coupled with slight or no disease of the other lung, are the usual indications for this treatment; but under certain circumstances it is advisable to induce an artificial pneumothorax on one side even when there is considerable disease on the other, for Forlanini has shown¹ that an alternate pneumothorax is successful in checking pulmonary tuberculosis which is active in both lungs.

It may also be found necessary to compress a lung less than half

¹ Forlanini, C.: "Ueber den Künstlichen nachträglich doppelseitigen Pneumothorax," *Deutsche Med. Woch.*, No. 3, 1911.

of which is involved, if more conservative treatment has been given a fair trial and has failed. The absence of fever is not a contra-indication, for the disease may yet be progressive, and may keep the patient an incurable invalid. A febrile or subfebrile temperature is, however, usually present, and its subsequent course is a valuable guide to the action of the pneumothorax on the course of the disease. Many other factors must also be considered in the choice of suitable cases, and in view of the risks involved, the patient should in most cases be informed of its limitations and dangers.

Technique of the Proceeding.

There are two methods in vogue: (1) Forlanini's, or the "puncture" method, consists of introducing nitrogen through a fine hollow needle into the pleural cavity, care being taken to let nitrogen escape into the body only after the operator has assured himself that the point of the needle is not in a vein; and (2) Murphy's, or the "open" method, which has been adopted by Brauer, and which consists of dissecting down to the costal pleura, which is exposed and then punctured by a blunt cannula. Nitrogen is now admitted through this cannula under manometric control. When a partial pneumothorax has been induced, Brauer completes it by the puncture method, which is simpler and less distressing for the patient than the open method. This, according to its supporters, involves less risk of pleural reflex and gas embolism.¹ Local anaesthesia is employed with both methods at first.

Dangers and Complications.

The two greatest dangers are pleural reflex and gas embolism. Several fatal cases have been reported as due to one or other of these causes. Many, if not most, have been due to faulty technique, and in skilled hands these accidents are rare. Thus Saugman,² with an experience of 104 patients and of over 2,200 injections, more than 400 of which were administered to patients with pleural adhesions which caused the lung to be wounded, lost only one patient from pleural reflex, and none from gas embolism. In my own experience of eleven cases, and of over fifty injections, I have only once seen pleural reflex which passed off in a few minutes.

¹ Robert Persch (*Wiener Klinische Wochenschrift*, September 21, 1911) has recently published a paper in which he compares the relative merits of two operations at considerable length, and in which he points out the numerous advantages, including greater simplicity, safety, and painlessness of the operation by puncture. The technique of the "open" method has been admirably described by Herbert Rhodes (*British Medical Journal*, October 28, 1911).

² Saugman, C.: "Behandlung der Lungentuberculose mittels künstlicher Pneumothoraxbildung," *Beihfte zur Med. Klinik*, No. 4, 1911.

The chief complication is an effusion into the pleural cavity which occurs in about one-third of all cases. It is usually preceded by dyspepsia and nausea, and is associated with fever which, as a rule, falls by lysis. This complication is often serious in an early stage of the treatment, and it may be the turning-point in favour of the disease. It is of less importance later on, when the patient has acquired greater powers of resistance, and it may even run an afebrile course.

Surgical emphysema may be superficial or deep. In the latter case it is frequently troublesome, as it gives rise to dysphagia and pain. It is caused by the use of too high an intra-pleural pressure induced in the attempt to break down pleural adhesions, and it is therefore usually associated with those cases in which insufficient collapse of the lungs exists.

Pneumothorax and Hæmoptysis.

Provided pleural adhesions are slight, and the physician is able to ascertain which lung is the seat of the hæmorrhage, no more certain method of arresting hæmoptysis exists than that of compressing the lung by an artificial pneumothorax. Several cases have been reported in which this treatment arrested the disease as well as the hæmoptysis.^{1 2 3}

Results.

If complete collapse of the affected lung is obtained, the temperature rapidly falls to normal in the absence of active disease elsewhere in the body. Other features of the improvement in the patient's condition are a gain in weight and strength, the disappearance of night-sweats, cough, and expectoration. The disease is permanently arrested in most such cases, but it sometimes flares up again if the compression of the lung is not consistently maintained or if it is abandoned at too early a date. There are now several cases on record in which the disease was permanently arrested by compression which was maintained for less than six months, but in the majority of cases the treatment should be continued for at least a year or two.

¹ Thue, K.: "Behandlung der Lungentuberculose mit künstlichem Pneumothorax." *Norsk. Magazin f. Lægevidenskab*, No. 12, 1908.

² Lillingston, C.: "The Treatment of Phthisis and Hæmoptysis by Artificial Pneumothorax," *Lancet*, July 15, 1911.

³ Brauer, J., and Spengler, L.: "Klinische Beobachtungen bei künstlichem Pneumothorax," *Beiträge zur Klinik der Tuberculose*, No. 1 1911.

THE ACTION OF RADIUM AND "DIORADIN" IN TUBERCULOSIS.

BY LEONARD ROBINSON,

M.D. EDIN. AND PARIS,

Physician to the Hertford British Hospital, Paris.

DR. SAMUEL BERNHEIM and Dr. Louis Dieupart, in their recent comprehensive communication,¹ consider that the principal therapeutic action of radio-active iodine with menthol, or "dioradin," as this product has been christened by Professor Szendeffy of Budapest, and which is essentially antibacillary in action, is due to the radium it contains. Professor Szendeffy holds the same opinion. Ether being the excipient, the radium and the iodine are eliminated slowly by the lungs, and thus in phthisis act locally at the seat of the lesion.

It is of interest to look back and review rapidly the work done on the subject of the action of radium on tuberculous lesions of the skin which led up to the present and more recent application of radium to other lesions of tuberculous origin.

Immediately after the remarkable discovery of M. and Mme. Curie, medical men, knowing the efficacy of the Roentgen rays, the Finsen light, and the apparatus created in France by Foveau de Courmelles, Lortet, and Genoud, tried to utilize the radio-activity of this powerful substance against cancer.

In 1905, Dr. Danlos, physician to the St. Louis Hospital, presented to the Société Française de Dermatologie et de Syphiligraphie very favourable conclusions on the use of radium on certain forms of epithelioma, nævi, and tuberculous lupus. As early as July 3, 1902,² Dr. Danlos was the first to make a communication to this society on the results he had obtained by applications of radium in tuberculous lupus. Dr. Brocq, the dermatologist, in spite of the declarations of Professor Hallopeau, declared that this treatment was of real interest, and that Dr. Danlos should be encouraged to continue his research, and to state with precision the conditions he found favourable to obtain a cure in tuberculous lesions of the skin.

Dr. Louis Wickham and Dr. Degrais,³ in a recent contribution, state: "We are of opinion that radium can be of service in all forms

¹ Bernheim, S., and Dieupart, L.: "Nouveau Traitement de la Tuberculose par l'Iode Mentholé Radio-actif," *La Revue Internationale de la Tuberculose*, pp. 332-371, May, 1911.

² Danlos: *Presse Médicale*, p. 677, 1902.

³ Wickham, L., and Degrais: *Société de Chirurgie*, April 23, 1911.

of tuberculous skin affections; that it deserves a special place in the treatment of vegetations, tuberculous ulcerations, lupus of the conjunctiva, vicious scrofulous scars, and lupus erythematosus."

In a previous communication Drs. Wickham and Degrais¹ speak of the radio-activity of liquids and of their remarkable action. The passages referred to are quoted *in extenso*, as they show the germinal idea which has been applied by Dr. Szendeffy, and experimentally tested in the anti-tuberculous dispensaries in Paris by Drs. S. Bernheim and Dieupart:

"Radium bromide is soluble in water. In this form the radium is free, and gives out a gas or 'emanation' in addition to the α , β , and γ rays. This gas confers a borrowed radio-active property on all elements with which it comes in contact. We have injected radio-active solutions into the skin (into lupus). The doses of radium are extremely weak in these conditions, and the liquid is probably absorbed very rapidly; but they contain an element, the 'emanation,' which is wanting in radiations coming from the usual apparatus in use.

"There exists, then, a force, a form of energy, which has not yet been sufficiently studied, but which possesses evident bactericidal properties, as can be easily verified. Dr. Dominici has proved the action of the 'emanation' on cultures of the bacillus of Koch.

"In a case of common nodular lupus there was only improvement to a certain stage; in a case of lupus erythematosus, with numerous patches, those which were treated a year ago by injections have disappeared without any recurrence so far, while others treated by the usual method of applying apparatus to the skin have broken out again.

"This shows a fresh field for further and most interesting research."

Dr. Foveau de Courmelles, in his book² on radium, quotes the research of Caspari and Hoffmann on the effect of radium on the bacillus of Koch. Caspari sterilized bacilli introduced into the anterior chamber of the eye in the guinea-pig; there was no infection.

Drs. Dominici and Cheron³ have obtained considerable improvement or cure of some deep-seated extra-pulmonary lesions of tuberculous origin by the introduction into the tuberculous tissues of silver tubes containing radium sulphate (0.03 gr. to 0.05 gr.) left *in situ* for twenty to twenty-four hours at each application. The favourable cases included obstinate chronic tuberculous glands, several fistulae which persisted after resection of the epididymis, as well as several

¹ Wickham and Degrais: *Presse Médicale*, February 22, 1908.

² De Courmelles, F.: Tarjas, editor. Paris, 1904, p. 22.

³ Dominici and Cheron: *Académie de Médecine*, July 25, 1911.

cases of caries of the ribs in children. The treatment was not successful in glands that were fibrous and chalky, and also in joint diseases in adults. The cure took place in three or four months on the average, and no accidents which could be imputed to the treatment were observed.

Dr. Szendeffy¹ experimented on the bacillus of Koch with radium with results as follows :

1. One milligramme of radium barium chloride, covered by a plaque of mica, did not arrest the culture of the bacilli.

2. With a watery solution of radium a great quantity of radiferous salt was necessary to arrest the culture. Small quantities, even when added directly to the culture bouillon, were without effect.

3. Having already obtained an appreciable result with radio-active substances mixed with terpenes, he now used iodine and menthol, to which he added radium barium chloride. (a) *In vitro*, 5 to 6 centigrammes of this solution stop the propagation of acid-resisting bacilli. Without the radium, which is only in small quantity, 10 centigrammes of iodine and menthol solution was necessary. (b) Guinea-pigs weighing 200 to 350 grammes were perfectly tolerant to the injections of radio-active iodine and menthol; injections given every other day produced no symptoms of intoxication. (c) The resistance to infection gave the following results: Two guinea-pigs inoculated with bacilli of Koch in the peritoneal cavity died in six and ten weeks after the injection, the lungs and the peritoneal cavity being full of tubercle. A guinea-pig was given for three days preventive injections of 3 centigrammes of the iodine and menthol solution, then inoculated with tubercle, afterwards receiving ten daily injections of radio-active iodine and menthol. Dissected six weeks later, the lungs were found perfectly healthy. (d) In another series of experiments, guinea-pigs inoculated in the peritoneum and in the thigh died in four to ten weeks. Guinea-pigs inoculated in the same way, and given injections of 3 centigrammes of the iodine and menthol solution every other day, were cured fairly rapidly of their ulcerations, and six months later were still alive.

The only hitherto published results of the therapeutic application of "dioradin" in consumption are the seventy-five cases given in the original paper by Drs. S. Bernheim and Dieupart.²

At the present time a detailed research is being carried out on the action of "dioradin" on the bacillus of Koch, thus completing the researches of Professor Szendeffy. Drs. S. Bernheim and L. Dieupart are collecting histories of all the cases now being treated, and towards

¹ Szendeffy : Quoted in *Revue Internationale de la Tuberculose*, pp. 334, 335, May, 1911.

² Bernheim, S. : *Revue Internationale de la Tuberculose*, op. cit., pp. 338-356.

the end of the year will publish the experimental proofs of the anti-toxic and antibacillary action of "dioradin," as well as the cases which will, they are confident, prove the success of this treatment by radio-active iodine and menthol in tuberculous disease of the lungs, bones, and glands.

In a recent article¹ I have dealt with some of the practical points in the application of this new form of treatment, which, to say the least, merits careful and unprejudiced investigation.

¹ Robinson, L.: "A Note concerning the Treatment of Tuberculosis by Radio-active Iodine and Menthol," *British Medical Journal*, July 8, 1911.

August, 1911.

PERSONAL OPINIONS.

THE SCIENCE AND ART OF SANATORIUM MANAGEMENT.

By HORACE WILSON,

M.B., B.S. LOND.,

Late Resident Medical Officer to Crooksbury Sanatorium; Clinical Assistant to the Mount Vernon Hospital for Consumption and Diseases of the Chest, and the Royal Hospital for Diseases of Chest, City Road, London.

A SUCCESSFUL sanatorium depends not only on a suitable site, pure air, and costly buildings, but also on capable management by a staff educated in sanatorium methods, guided by a medical superintendent who has special and intimate knowledge of the disease, and who is endowed with complete control and disciplinary powers. Loyalty, interest, and efficiency in all departments, are absolutely essential. No slackness is permissible from top to bottom of the institution, and the most perfect regularity and discipline is necessary in each department. If management is defective, treatment is difficult; and sanatorium treatment consists not merely in leading an open-air life, but in correlating and utilizing all known measures for increasing the specific resistance of the patient, both medical, physical, and hygienic, under the most promising climatic conditions.

Sanatorium management differs largely from that of other institutions, in that the patients generally feel so well and are of so hopeful a temperament that they do not realize that the restrictions are really instituted for their bodily good, and this sometimes makes them difficult to control.

Whether the sanatorium be a public or private one, strict discipline must be maintained. In every sanatorium, from time to time, there arrives the patient who regards his or her sojourn there as a pleasant holiday, rules simply made to be broken, and who, by "showing off" before the patients, creates a spirit of dissatisfaction and insubordination which rapidly infects others. Whether paying patient or not, if this conduct does not cease after a timely warning, this patient must go, or in the long run the reputation of the sanatorium will suffer and its utility be impaired.

It cannot be too strongly emphasized that, in addition to fresh air, a great deal depends on the regulation of the rest and exercise for

each patient, and the skilled administration of tuberculin in suitable cases. The tendency in many sanatoria is to run them too much on the lines of a hydropathic establishment ; amusements are taking too prominent a part in the régime ; patients are too much inclined to take things too lightly, and to forget they have entered the sanatorium to try to avoid the clutches of a deadly disease.

The stethoscope should take a more prominent part in the daily routine ; the mere monthly examination is inadequate, and supplementary examinations of the diseased area keep one in touch with the patient's progress and strengthen their feeling that a personal interest is taken in their welfare.

Visitors as a rule are discouraged ; but so long as their visits do not interfere in any way with the patient's routine, and are only permitted at convenient hours, their visits do not seem as harmful as is generally imagined. An exception to this, perhaps, is the visits of children, who undoubtedly do more harm than good, and who also often disturb other patients who need quiet.

The nursing and kitchen departments should be quite separate, and a room with sink and hot-water supply must be provided for the nurses to fill hot bottles, deal with sputum receptacles, and attend to those duties which belong to the nursing department alone. No food brought out of a patient's room should be utilized a second time, and the washing of crockery and knives and forks must be done with the greatest thoroughness and with ample water-supply. The entire staff should, in addition to this, have their separate utensils, and should not use those allotted to the patients. As regards the disposal of sputum, if receptacles lined with paper are used which contain a little disinfectant, these must be collected and burnt in the hottest part of a furnace, the mugs being boiled with soda before being used again. This furnace should be away from the kitchens, and the work of combustion entrusted to some quite reliable person. Muslin or paper handkerchiefs must be used, and collected periodically for burning ; while for outdoor use every patient should be provided with a flask. The muslin or paper handkerchiefs should be used indoors, and kept in a tin attached to the bedpost. On no account should these handkerchiefs be used to receive sputum, nor should they be kept under the pillow nor in the pocket. The contaminated pocket will sooner or later find its way to the "wardrobe dealer," and serve as a focus of dissemination.

In every sanatorium the nursing should be under the charge of at least one fully-trained Sister, who should instruct those under her in the practical elements of their duties, and weekly classes should also be held by the medical officer on the application of general nursing to sanatorium treatment. By this means a special class of sanatorium

nurse will grow up, with a special knowledge of the requisite routine of the nursing of such cases. Complications frequently turn up, most often hæmoptysis and diarrhoea; the work may then suddenly become heavy and a tax on the resources of the staff. For this reason the practice of employing nurses or medical men who are themselves "touched" with the disease is strongly to be deprecated, as unfair to both themselves and patients.

The culinary department is one which needs constant supervision in a sanatorium. Food tends to chill quickly, and care must be taken, by means of hot-water plates and covers, etc., with quick service, to present the food in an appetizing way. Also, special diets have to be arranged for those unfortunately afflicted with laryngeal tuberculosis.

When diarrhoea has been present in more advanced cases, and a bedpan is in use, the entire bedding should be disinfected by stoving before again being used. On discharge, it is good to fumigate the patient's clothing, however slight the case, and all bedclothing and body linen must be disinfected before sending it to the laundry. Wards and private rooms should be periodically disinfected by means of a formalin lamp, and the walls washed down with formalin solution.

The above are a few of the practical points concerned in the management of a sanatorium. The question of treatment has been purposely avoided, but the great principle involved is that "sanatorium treatment" as carried out nowadays is not the "open-air" treatment of consumption, but the treatment of consumption in the open air—a very different matter!

INSTITUTIONS FOR THE TUBERCULOUS.

THE CROSSLEY SANATORIUM.

THE Crossley Sanatorium was the munificent gift of the late Sir William Crossley, Bart., to the City of Manchester. Until recently it accommodated ninety patients, but has lately been enlarged to accommodate one hundred.

The sanatorium proper consists of one large three-storied building with a frontage 300 feet long, facing south by south-east, situated on a hill overlooking the Cheshire Plain, at an altitude of 500 feet above sea-level. The sanatorium stands in a clearing of the Delamere Forest, and is surrounded by spacious grounds extending for 80 acres.

The majority of the beds are in the gift of the Manchester Consumption Hospital, but the whole of the upper story, containing thirty-six beds, is reserved for private patients, who pay from two to three guineas per week.

The sanatorium is self-contained, and has its own water-supply, which is obtained from a well 500 feet deep. Its extensive engineering department provides power for lighting and heating, and also runs a very fully-equipped modern steam laundry.

Situated some distance from the main building, but in the sanatorium grounds, is the Nurse's Home. In this the whole of the staff live, except the medical officer on duty, who sleeps in the main building. A regular night-staff is always maintained.

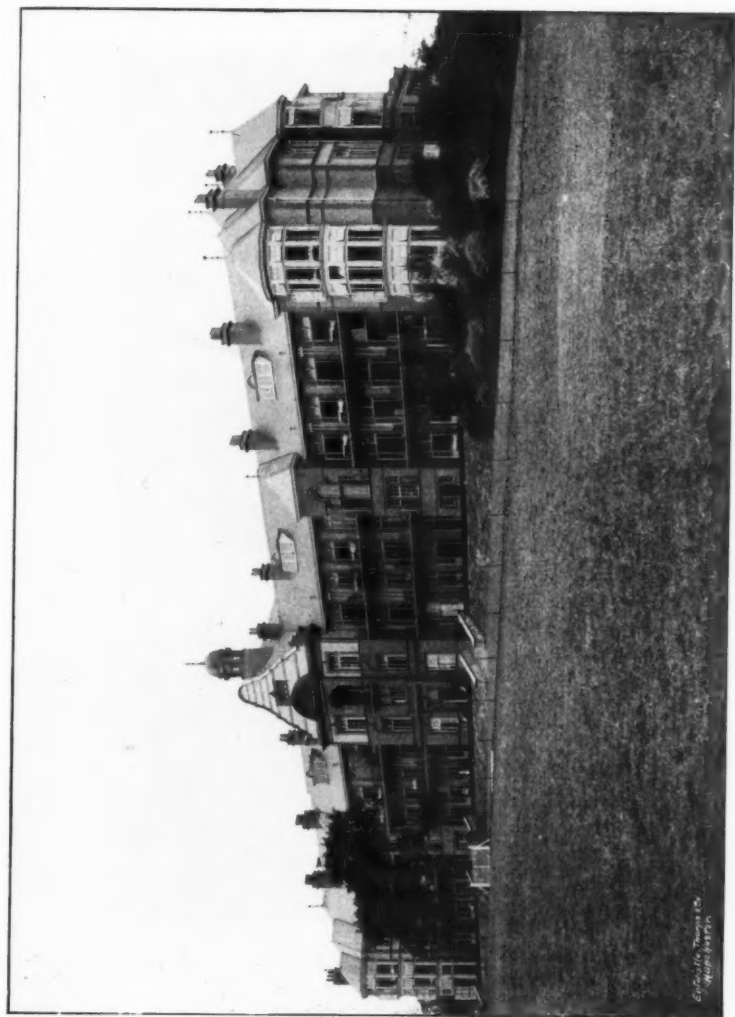
No patients are accepted other than those in the early stages of consumption. This rule is also applicable to those persons desiring to become private patients.

All meals are served in the big dining-hall, and no more than eight patients are allowed at any one table.

The outdoor shelter accommodation is for use in the daytime only, and is arranged on two principles: (1) Shelters to accommodate two, for those requiring quiet; and (2) larger shelters to accommodate six, for the more convalescent patients and those who are allowed exercise or work. The favourite form of recreation, and one very much encouraged, is golf, on the short golf-course which has been arranged in the sanatorium grounds. In this, of necessity, there are no long drives.

Those patients who, in the opinion of the medical officers, would be benefited by graduated labour, are given gardening or set to work on the poultry farm attached to the sanatorium. Both work and recreation are arranged as far as possible so as to interest the patients in some particular direction.

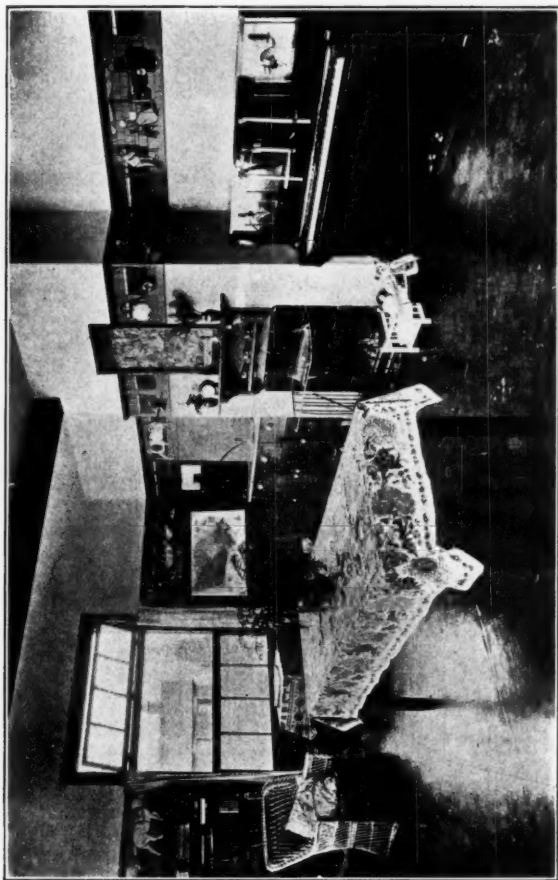
G. HEATHCOTE, M.D.,
Senior Resident Medical Officer



THE CROSSLEY SANATORIUM.

*Edwin L. Thompson
Hagley, Pa.*

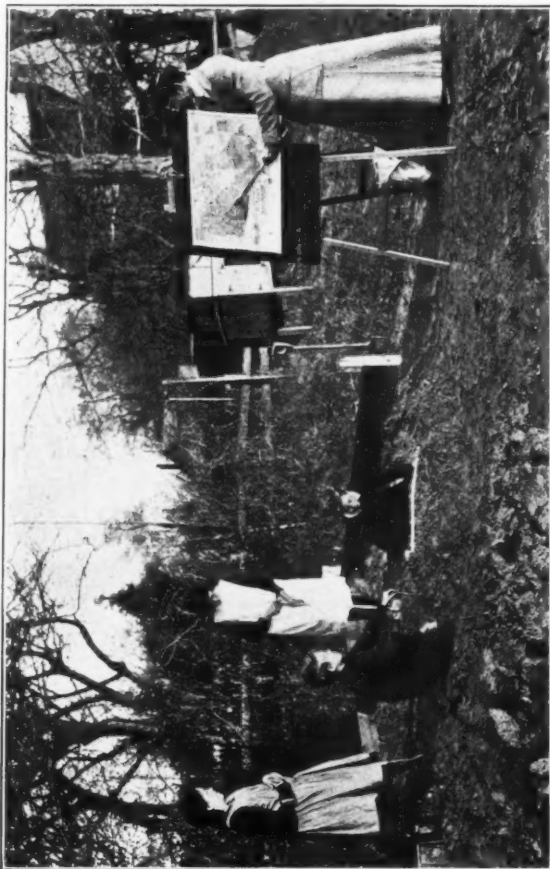
KINDERCOT: THE OPEN-AIR SCHOOL FOR
CHILDREN AT THE MAITLAND
SANATORIUM.



KINDERCOT: THE CHILDREN'S DAY-ROOM.

IN the anti-tuberculosis campaign the care of tuberculous and tuberculously disposed children is of the very first importance. Whenever possible, special provision should be made for them in sanatoria schools. It is not to their advantage that the cases should be mixed with adult patients in institutions where no adequate provision can be made for their special needs of work and play. To take boys and girls of from the ages of six or seven years to twelve or fourteen years away from the influence of home and school is a serious matter, even though it

may be necessary for their health's sake. Their future must be considered. Many tuberculous children are missing the education on which will depend their place in life, and not a few are now rapidly forgetting what they have learnt; and, moreover, the power of learning is being lost. When it can be shown that discipline and carefully-



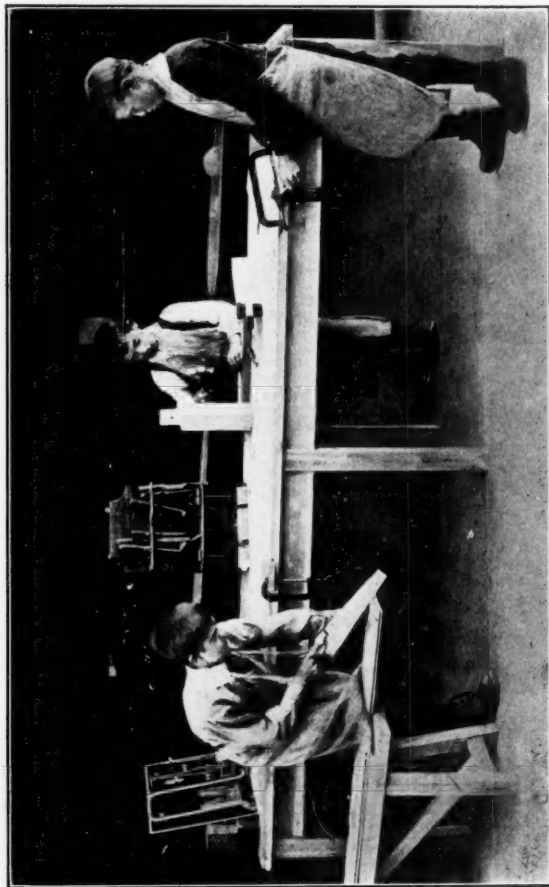
KINDERGOT: A GEOGRAPHY LESSON AT THE SAND-HEAP.

regulated work are, in the case of children as in that of adults, necessary adjuncts of their "cure," and extremely important for their future health and well-being, the value of open-air schools on the lines of that at Maitland Sanatorium, Peppard Common, Oxfordshire, cannot be exaggerated.

This extension of the sanatorium life at the Maitland Sanatorium was started in June, 1910, by the opening of a separate building for

the children in the grounds of the sanatorium. Its object is to "provide treatment for children suffering from incipient consumption, and to give them at the same time education under the best possible conditions."

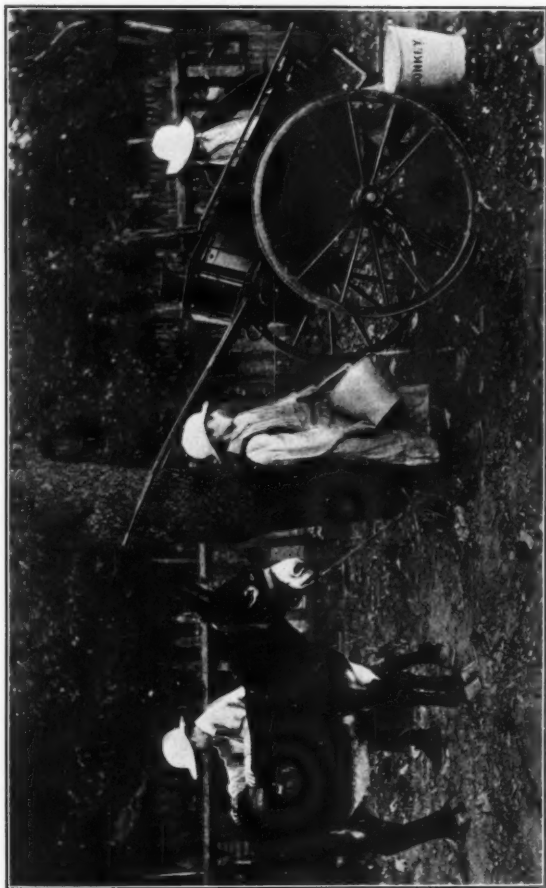
The special feature of "Kindercot," as the children's home is



KINDERCOT: LEARNING TO USE TOOLS.

called, is its combination of school life with sanatorium treatment. There are regular hours of work and play, strictly regulated, of course, in each case by medical supervision. In summer the school is an open-air one; in winter the classroom is of the airiest and pleasantest. There is a great playing-shed where garden tools, etc., are kept, and where in bad weather the boys and girls can occupy themselves in

various ways not possible in the house. The sanatorium stands high on a spur of the Chilterns, in the midst of lovely country, and is on the edge of a common, beautiful at every season of the year; while there is a home-farm supplying milk, butter, eggs, and vegetables of the best—supplying also the interest of animal life so dear to the

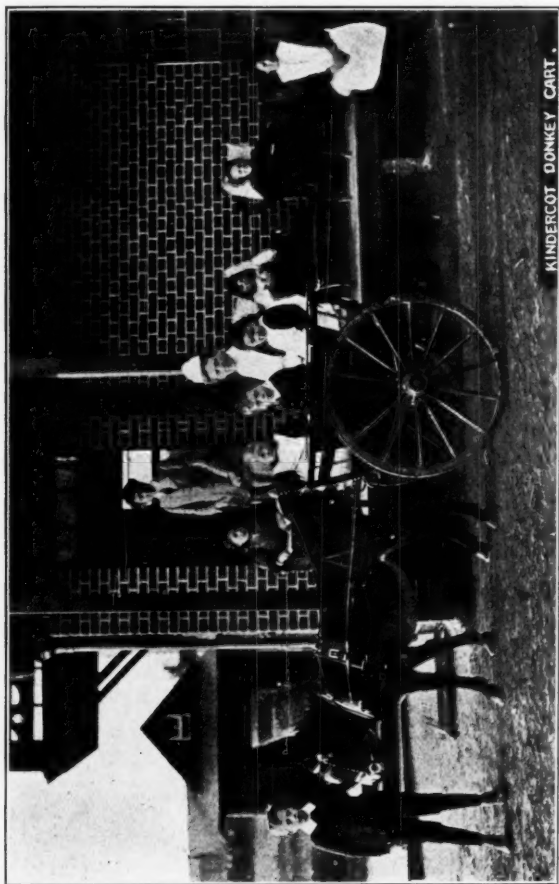


KINDERCOT : PREPARING FOR A PICNIC.

youthful mind. The children possess a donkey and cart of their own, and so even the youngest and frailest can enjoy the most delightful outings. The life is one thoroughly healthful for mind and body. As for lessons, "they comprise the ordinary school subjects, modified to open-air conditions where possible, special points being made of singing classes, breathing exercises, Nature study, sand and clay modelling, etc.

All the children share in domestic work—the elder girls with a view to service, and the boys are taught garden, stable, and farm work as opportunity offers."

The following is taken from the Medical Report of the Maitland Sanatorium for the year ended, June 30, 1911: "Of the fifteen children,



KINDERCOT DONKEY CART.

KINDERCOT: READY TO START.

eleven had definite signs of lung disease; four had marked personal and hereditary predispositions, but not declared phthisis. The results of treatment on the fifteen cases on discharge, or on June 30, 1911, are as follows: Practically cured (*i.e.*, no active signs of phthisis, and no symptoms of illness or delicacy), thirteen; much improved, one; stationary (under treatment less than four weeks), one. Two children have had tonsils and adenoids removed; one case of ophthalmia and

several dental disturbances have been dealt with. All the children have been able to attend the sanatorium school in varying degrees of regularity, and there has been no case of serious illness or intercurrent



KINDERCOT ; IN THE GARDEN.

affection. Six of the children sent by the Boards of Guardians of Kingston and Reading were children who had lost one or both parents from phthisis." The age limit for admission to Kindercot is: Girls, six to fourteen; boys, six to twelve.

ESTHER CARLING, M.D.,
Resident Medical Superintendent.

NOTICES OF BOOKS.

THE SPECIFIC DIAGNOSIS AND TREATMENT
OF TUBERCULOSIS.

THE fact that the fifth and sixth editions of Bandelier and Roepke, the familiar German textbook on tuberculin, both bear the date 1911 on their title-page, is ample testimony to the wide and growing recognition the remedy has achieved in the home of its birth.¹ It is a comfort to find the sixth edition no bulkier than the fifth, judicious prunings having balanced the introduction of new matter; the diagnostic portion is slightly shortened, the therapeutic part somewhat enlarged. Under the cutaneous reaction we find new matter in the addition of pneumonia, typhoid, diphtheria, acute rheumatism, and some other diseases to the familiar measles, as conditions which temporarily abolish sensitiveness to tuberculin. This we should be tempted to consider a true depression of antibody formation such as we encounter in advanced tuberculosis itself, but Rolly, who is responsible for the communication, is supported by the authors in the contention that the loss of reactivity is due to skin changes alone. More room is given in this than in the preceding edition to the quantitative cutaneous test of Ellermann and Erlandsen—a move of hopeful augury, but attended with but little result at present. We are pleased to find a new illustration in the section devoted to subcutaneous tuberculin—namely, that of a Lieberg's syringe, an instrument invaluable to the tuberculin administrator, graduated up to $\frac{1}{10}$ c.c., and now obtainable in London shops. Certain new paragraphs of the book contain an interesting disclaimer by the authors of the relationship of the cutaneous and local subcutaneous to the other tuberculin reactions, and hence their value as a guide to dosage. They dismiss very curtly the claims of White and Graham, who introduced a quantitative cutaneous method whereby sensitiveness to subcutaneous dosage could be gauged. The work of these authors and that of Ellermann and Erlandsen already cited, urgently calls for wider investigation at the hands of competent observers. In the special part devoted to tuberculin preparations certain new-comers are apparent, notably the albumose-free tuberculin manufactured by the Farbwerke Höchst. This corresponds to old tuberculin, but the bacilli are grown in an albumose-free medium, and it is concentrated without heat; it is said to cause less local and general disturbance on injection, and the writers therefore recommend it for ambulant treatment. Seeing that Hamburger could inject 1 c.c. of old tuberculin into a healthy boy without any effects, save local ones due to the glycerin content, it does not seem as if the toxic qualities of old tuberculin were worth agitating about. The albumose-free tuberculin is, however, preferable to the next preparation in the book, the *tuberculinum purum* of Gabrilowitsch. In this the toxic properties are removed by chemical means, much to the detriment, we should suppose, of the immunising substance also.

¹ "Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose." By Bandelier and Roepke. Sixth edition. Pp. 282. Würzburg: Curt Kabitsch. 1911. Price M. 6.60; bound volume, M. 7.80.

The only further addition which appears to call for comment is a short new section on aural tuberculosis; in it the point seems to be missed that this is, in its essential characters, only a form of tuberculosis of bone. In other respects the part dealing with surgical tuberculosis remains, as heretofore, rather scrappy and lifeless. The book as a whole, though somewhat long-winded and discursive, and decidedly lacking in practical qualities, can, nevertheless, be commended as a valuable textbook. Its tone reminds us that, even in Germany in the year 1911, tuberculin has its detractors, and that at present these people have to be reckoned with.

CLIVE RIVIERE, M.D.

THE EXTERMINATION OF TUBERCULOSIS.

The collection of studies edited by Dr. Halliday G. Sutherland, and dedicated to Dr. R. W. Philip, assumes much the character of a *Festschrift*, for the originator of "The Edinburgh System" of systematic attack on tuberculosis.¹ No less than thirty-two well-known experts are among the contributors to this notable volume. The international spirit is indicated by such names as Adami, Arloing, Béranek, Biggs, Carlsson, Gorkom, Hanssen, Marval, Nikolsky, Saugman, and White. Dr. Philip is to be congratulated that, unlike the majority of pioneers, he has been spared to see his views accepted, and to a large extent adopted, and has, moreover, received the recognition and honour rightly due to his statesmanlike foresight and skill as an organizer and administrator. The "open letter" to Dr. Philip, which forms the introduction to this cosmopolitan gathering of essays, states that this work has been prepared, and is now offered "not only as a tribute to the pioneer in the field of medicine, but also in the hope that these studies, bearing the impress of your teaching, and contributed by writers of many nations, may advance the movement in this and in other lands." The appearance of this handsome volume is timely, and it cannot but exercise far-reaching influence in strengthening the hands of those who are labouring for the co-ordination of work and the co-operation of workers. There are thirty-one chapters dealing with many and varied aspects of the tuberculosis problem. The editor, Dr. Halliday Sutherland, indicates the extent of the disease, deals with the sources of infection, and describes sanatorium methods of treatment. Dr. D. J. Williamson furnishes an excellent account of the functions, organization, methods, and results of the Tuberculosis Dispensary. Dr. James J. Galbraith describes the conception, construction, and administration of the sanatorium. Professor Béranek explains the theoretical and practical basis of tuberculin treatment. Dr. W. E. Goss and the editor deal with the important subject of open-air schools. The place of the Farm Colony in the management of consumptives is discussed by Dr. A. H. Macpherson. Dr. A. Maxwell Williamson writes on the hospital for

¹ "The Control and Eradication of Tuberculosis: A Series of International Studies." By Many Authors. Edited by Halliday G. Sutherland, M.D., Medical Officer to the St. Marylebone Anti-Tuberculosis Dispensary. Pp. xvi+451. With 30 illustrations and frontispiece-diagram of the Edinburgh Anti-Tuberculosis Scheme. Edinburgh and London: William Green and Sons, 2 and 4, St. Giles Street, Edinburgh, and Temple Bar House, 23, Fleet Street, London, E.C. 1911. Price 15s. net.

advanced cases. A particularly valuable contribution on the administrative control of pulmonary tuberculosis comes from the experienced pen of Dr. W. Leslie Mackenzie. A series of important articles deals with the tuberculosis problem as presented in Canada, South Australia, South Africa, India, the United States, New York City, Massachusetts, Pittsburg, Germany, Austria-Hungary, Russia, Italy, Scandinavia and Denmark, Switzerland, and the Netherlands. The main value of the book, however, depends on its explicit exposition of the origin, progress, and methods of the Edinburgh system of dealing with the problem, and as this is the most complete and effective scheme as yet evolved for the systematization of practical effort for the control and eradication of tuberculosis, this volume should be studied by all administrators and skilled workers engaged in the anti-tuberculosis campaign. It is unfortunate that the book has no index.

PULMONARY TUBERCULOSIS.

It is eighteen years since the first edition of Sir Douglas Powell's well-known and justly prized treatise on affections of the lungs and pleuræ first appeared. The fifth edition has just been issued after wellnigh ten years' work spent in its production.¹ The new volume has been brought thoroughly up-to-date, and now forms the most complete and serviceable of systematic works on pulmonary disease. Readers of this journal, however, will be particularly interested in the very complete study of tuberculosis of the lungs, which occupies no less than 265 pages. All aspects of the subject receive detailed consideration. For anyone desirous of obtaining a comprehensive and well-proportioned view of the strictly medical aspects of the problem no better account can be recommended. The plates, figures, and charts illustrating this portion of the book are excellent. Moreover, the references are numerous and representative. The pathological and clinical features of the various forms of the disease are described with scientific accuracy and no little literary skill. In the section on diagnosis much new work has been incorporated, particulars being given as to X-ray examination and the various methods for employing tuberculin. With regard to Von Pirquet's cutaneous reaction, the opinion is expressed that "if positive, it is of minor value; if negative, it would point strongly against the tuberculous nature of the disease." The description of sanatorium treatment is good, but lacks somewhat that intimate acquaintance with hygienic proceedings which can come only from long residence in one of these modern schools of health. There are but few superintendents of sanatoria in this country who would endorse the advice given as regards the use of alcohol: "Should the appetite flag, or the case 'hang fire,' a glass of Burgundy, port wine, or good beer at lunch and dinner may sometimes be prescribed with advantage." With regard to the conclusion recently expressed by Professor Karl

¹ "On Diseases of the Lungs and Pleuræ, including Tuberculosis and Mediastinal Growths." By Sir Richard Douglas Powell, Bart., K.C.V.O., M.D. (Lond.), F.R.C.P., Physician in Ordinary to H.M. the King, Consulting Physician to the Middlesex and Brompton Hospitals; and P. Horton-Smith Hartley, M.V.O., M.D. (Camb.), F.R.C.P., Physician to Out-patients, St. Bartholomew's Hospital; Physician, Brompton Consumption Hospital, etc. Fifth edition. Pp. xxviii+712. With 29 plates (6 coloured) from original drawings, and 53 illustrations in the text. London: H. K. Lewis, 136, Gower Street, W.C. 1911. Price 21s. net.

Pearson and his co-workers that "the mortality among sanatorium patients does not show any improvement over that of earlier days," the authors declare that "the memoir is a valuable one, and should give pause to the exaggerated claims which have been, and still are, made in regard to the value of sanatorium treatment." And, further, this opinion is expressed: "It is to be expected that, as the hygienic treatment of phthisis is better understood, the statistics of the sanatorium and non-sanatorium cases as regards recovery will become more blended. We are, however, ourselves still of the opinion that for the vast majority of consumptive invalids institutional treatment, in the first instance at least, is the measure best calculated for the benefit of the patient." Much space is devoted to the consideration of the influence of climatic conditions, and valuable information is given respecting various health stations. There is much practical wisdom displayed in the sections on treatment. With regard to the use of the several varieties of tuberculin, a conservative caution is exercised. The directions regarding dosage are not quite as explicit as could be desired, and certainly the nomenclature recommended is by no means universally adopted. We cannot find any description of the production of a pneumothorax now advised as a legitimate method of dealing with some cases of pulmonary tuberculosis. We could have wished also that the medico-sociological aspects of the problem had been more definitely dealt with, particularly in view of the far-reaching action which is now to be taken under the National Insurance Act. Finally, a word of unqualified praise must be given for the admirable index prepared by Mr. Archibald L. Clarke.

TUBERCULOSIS OF JOINTS.

Dr. Ely has written a very valuable work on tuberculosis of joints.¹ It deserves the careful study of all clinicians and particularly of practitioners who have to deal with children. As the author points out in his preface, although we have the authoritative works of Watson Cheyne and Senn in English, joint tuberculosis has furnished the subject for a number of books and monographs in foreign languages, and has also received notice in works on surgery and orthopaedics; "most of these productions voice the results of their authors' experience exclusively, and they all manifest such a diversity of opinion that one who would write a book on joint tuberculosis must needs follow the example of their authors and set down his own opinions, based on his individual clinical experience, or else must choose from among the conflicting opinions such as appear most rational." In his difficulty Dr. Ely sought direction by systematic research in the pathological laboratory. More than three hundred tuberculous joints were thoroughly examined. It is strange that, "with a few notable exceptions, those who have written on the disease have confined their attention to its clinical side, and most writers who have studied the pathology have been content with examination of the gross specimen." The book is a valuable contribution to an avowedly perplexing problem. In a comparatively

¹ "Joint Tuberculosis." By Leonard W. Ely, M.D., Attending Orthopaedist to the Children's Hospital, Denver, Col., U.S.A., etc. Pp. 243. With illustrations. Bristol: John Wright and Sons, Ltd. 1911. Price 12s. 6d. net.

short compass the essentials are presented with comprehensiveness of outlook, and yet with opinions based on painstaking investigations. The value of the book is much enhanced by references to the best literature on the subject. The illustrations exemplifying the micro-pathology of tuberculous processes in bone and joints are particularly good, and form a striking feature of the book. In the section on diagnosis, when referring to Von Pirquet's test, the author expresses his view that "the test is trustworthy in all forms of incipient tuberculosis, and is especially adapted to children of two to five years old," but he adds: "It is not reliable in the far advanced processes," and admits further that "a negative result is not conclusive evidence of the absence of a tuberculous infection." The principles of treatment are well-defined, and, in the sections dealing with the involvement of the various special joints of the body, details of management are given, illustrated in many cases by excellent photographs. The last forty-five pages are devoted to records of actual cases. The work has been well done, and the publishers have presented it worthily—the paper, printing, and general get-up of the book being excellent. We commend this monograph especially to the careful study of all surgeons, and particularly those who are called upon to deal with tuberculous children.

SANATORIA AND THE STATE.

The National Insurance Act provides machinery which promises to accomplish much for the restoration and relief of the consumptive worker, for whom till now no adequate provision has been available. If, however, sanatoria and other efficient means are to be secured for tuberculous sufferers, it is essential that members of Local Insurance Committees and other workers engaged in medico-sociological enterprises and efforts should understand the problem in all its bearings. The manual recently issued by Mr. C. H. Garland and Dr. T. D. Lister¹ provides in condensed form facts and principles which deserve consideration, if the present opportunity is to be wisely used. Opening with a chapter the heading of which is *What is a Sanatorium?* the authors discuss the rôle of the sanatorium as a training-school of health, and indicate its relation to other means and methods of dealing with tuberculous disease. They show that consumption is to be dealt with as an industrial disease, and endeavour to forecast the effects of the Insurance Act on the prevalence of tuberculosis. The authors believe that the sanatorium is "the most important link in a chain of measures by which consumption could be so considerably diminished that a bright prospect is offered of its eventual eradication." They claim that "the tuberculosis dispensary is an efficient means of dealing with a very large group of consumptive cases as they exist in the homes of the people." When indicating results of sanatorium treatment, an optimistic opinion is expressed, but there will be many who will dispute the accuracy of the statement that "as a matter of accumulated experience, the successful cases, wherein the disease becomes completely arrested, are about 70 to 80 per cent. of the admissions." In an

¹ "Sanatoria for the People; or, the State Campaign against Consumption." By Charles H. Garland and Thomas D. Lister, M.D. Pp. 71. London: The Scientific Press, Ltd., 28 and 29, Southampton Street, Strand, W.C. 1911. Price 1s. net.

Appendix the after-history of patients discharged from Benenden Sanatorium is given. In 1907 54 patients left the sanatorium, and of these 20 are known to be dead, 2 doing no work, 13 on full work, and the rest are untraced. The writers suggest that one of the best results which will accrue from the Insurance Act will be that the various institutions—sanatoria, tuberculosis, and tuberculin dispensaries, home visitation of consumptives, and the like—"will be set in their right places, and will work under the best conditions in the future." It is to be sincerely hoped that this will be so. Data of considerable interest are presented. It is shown that of the total of over £4,000,000 which is being spent every year in sick pay by Friendly Societies, 28 per cent., or £1,120,000, per annum goes to assist consumptives. "Poor Law institutions, in indoor and outdoor relief, are estimated to be spending over 10 per cent. of their total cost on consumption, and this is equal to a million and a half a year." At the present time something like £3,000,000 is being expended annually in dealing with consumption. Of the 40,000 deaths in England and Wales resulting from consumption, 32,800 are deaths of persons between twenty and sixty-five years of age. The working classes of the United Kingdom lose annually through this disease nearly £3,000,000, and this sum, added to the amount expended in the treatment of cases, brings up the consumption bill to £6,000,000 a year. "Valued at £200 per head, the loss of adult workers among the victims of consumption in Great Britain to-day represents an annual toll of something approximating to £9,500,000." The appearance of this brochure is timely, and it merits careful study.

MANUALS FOR MEDICAL PRACTITIONERS AND WORKS OF REFERENCE.

Dr. St. Clair Thomson's new work on affections of the nose and throat is one which will be invaluable to students and practitioners.¹ It has been designed to meet their particular needs, but even the experienced specialist cannot afford to neglect this complete, explicit, and thoroughly up-to-date treatise. Not only in substance and in literary presentation, but also in wealth of illustrations, printing, and general get-up, the book is probably the best of its kind in the English language. Throughout the author has kept his purpose steadily in view, and has wisely laid special emphasis on the clinical and pathological aspects of his subject, and has also given particulars regarding natural methods of defence and repair. A broad outlook and judicious balance have been maintained, and a comprehensive, serviceable, and really attractive work has resulted, free from the extravagances and eccentricities which often are manifested in the works of specialists. The book is one which medical superintendents of sanatoria and tuberculosis dispensaries will find of great assistance. Two admirable chapters are devoted to a full description of tuberculosis of the upper

¹ "Diseases of the Nose and Throat, comprising Affections of the Trachea and Esophagus." A Textbook for Students and Practitioners. By St. Clair Thomson, M.D., F.R.C.P., F.R.C.S., Physician for Diseases of the Throat, and Professor of Laryngology in King's College Hospital; Physician to King Edward VII. Sanatorium. Pp. xvi + 791, with 18 plates and 294 figures in the text. London, New York, Toronto, and Melbourne: Cassell and Company, Ltd. 1911. Price 25s. net.

air-passages, including lupus in the nose, pharynx, and larynx. The section on tuberculosis of the larynx forms a little monograph in itself. A fine coloured plate illustrates various forms of tuberculous involvement of the larynx and epiglottis. References to the literature of the subject are provided. A praiseworthy feature of the volume which the busy practitioner will appreciate is the collection of well-attested formulæ. The index is excellent, and has been prepared by Mr. Archibald Clarke.

Mr. Bland-Sutton is not only an experienced pathologist and skilful surgeon, but a long experienced student of men and animals, and possessing a broad outlook on life, wide sympathies, scientific instincts, and exceptional literary skill. His new book, in which he records the results of his recent travels in East Africa, will not only be welcomed by his friends, but should take a place among the best of serious contributions to the understanding of what is one of the most fascinating and important regions of the British Empire.¹ The book is a fascinating yet scientific record of impressions of Eastern Ethiopia made by the author during a journey taken in company with his friend and colleague, Dr. Comyns Berkeley. But it is much more: it is a valuable contribution to geographical, zoological, and ethnological science. The work describes Mombasa, the Uganda Railway, the Victoria Nyanza, and Uganda, and the natural features of the Rift Valley. There are also interesting essays on drums, the shepherd-warriors of Masailand, the people of the Kikuyu country, the naked hunters of the Mau forest, the natives of the Kavirondo country, and Ethiopian fashions in hairdressing, and the ornamentation of ears and lips. There is a splendid chapter on "safari," an East African phrase, signifying a caravan journey. Perhaps the most valuable portions of this remarkable book are those devoted to a description of the animal life of this land of natural wonders. The book throughout is illustrated with a wealth of finely-executed woodcuts. Mr. Bland-Sutton has written a work which will have a permanent place among our best books on scientific travel in Eastern Africa.

Sanatorium life is not only of value for its therapeutic benefits, but as affording opportunities for a course of hygienic instruction. Indeed, many are of opinion that the educative influence of the sanatorium is of the first importance. It is unfortunate that better provision is not made for the systematic training of all inmates of sanatoria in the principles of the hygienic management of consumptives and measures for the prevention of tuberculosis. Dr. Gilbert Heathcote, Medical Officer of the Crossley Sanatorium, Kingswood, Delamere Forest, Frodsham, Cheshire, has prepared a brochure² which seeks "to answer the common questions asked by the sanatorium patient, and to give a short epitome of many talks which have been necessary to remove misunderstandings regarding the uses and methods of open-air treatment." As Dr. James Niven, Medical Officer of Health for Manchester, indicates, "this brochure will be of very great utility not only to his patients, but to many others who do not come under his

¹ "Man and Beast in Eastern Ethiopia." From observations made in British East Africa, Uganda, and the Sudan. By J. Bland-Sutton, F.R.C.S. Pp. xii + 419. with 204 engravings on wood. London: Macmillan and Co., Ltd. 1911.

² "Talks with Sanatorium Patients." By Gilbert Heathcote. Pp. 47. Manchester; J. E. Cornish, Ltd. 1911.

care." In a series of clearly expressed sections the essential facts for a patient to realize, if he is to co-operate effectively with his doctor, are presented; and directions are given regarding rest and exercise, clothing, channels of infection, and the like. The most useful portion of this praiseworthy manual is that dealing with the continuance of treatment after leaving the sanatorium.

Tuberculosis is a medico-sociological problem which must be studied in its relation to all other human interests, and particularly sanitary science. The authoritative manual of Sir Arthur Whitelegge and Sir George Newman provides abundant evidence of the truth of this contention.¹ In the new edition of this excellent handbook not only are the most important applications of Preventive Medicine summarized in a condensed and succinct form, but up-to-date information is provided such as will be invaluable to medical officers and all interested in the physical advancement of the people at this important juncture in the history of the nation. Tuberculosis receives full consideration. We could have wished that the objectionable designation "phthisis" had been discarded. With regard to sanatoria the following statement is made: "To be thoroughly effective a sanatorium requires ample area. Temporary buildings cost from £250 to £300 per bed (including land, administrative buildings, etc.); permanent buildings may run up to £1,000 a bed. Maintenance is usually stated at 30s. to 40s. per week."

Dr. E. C. Seaton has done well to publish his Chadwick Medical Lectures in a revised and amplified book form.² The subjects dealt with—notification, hospital isolation, and other distinctly medical preventive measures, are presented in a form which should emphasize the importance of dealing with infectious diseases by prophylactic measures rather than remain satisfied with remedial and ameliorative procedures. This is a point of view which needs to be driven home particularly in regard to tuberculosis. There is an interesting chapter on "Phthisis" (when will public health authorities cease from using this antiquated and misleading nomenclature and adopt the modern terminology of "pulmonary tuberculosis"?) in which the late Dr. Bulstrode's able report "On Sanatoria for Consumption, and Certain Other Aspects of the Tuberculosis Question," is referred to, and Sir William Power's introductory letter is quoted *in extenso*. Dr. Seaton gives well-deserved praise to the pioneer work of Dr. Arthur Newsholme at Brighton, and indicates the relative importance of various factors in the reduction of the death-rate from pulmonary tuberculosis. In regard to the pressing matter of "sanatorium treatment," it is shown that "among the chief points for consideration will be the utilization of existing hospital accommodation for the reception of advanced as well as early cases of phthisis, for it is cases of the first-named kind that are apt to become foci of infection in the dwellings of the poor."

¹ "Hygiene and Public Health." By Sir Arthur Whitelegge, K.C.B., M.D., B.Sc., F.R.C.P., D.P.H., and Sir George Newman, M.D., D.P.H., F.R.S.E. Twelfth edition. Pp. x+760, with illustrations. London: Cassell and Company, Ltd. 1911. Price 8s. 6d. net.

² "Infectious Diseases and their Preventive Treatment." By E. C. Seaton, M.D., F.R.C.P., F.I.C., Consulting Medical Officer, Surrey County Council. Pp. xvi+214. London: Published for the University of London Press by Hodder and Stoughton, Warwick Square, E.C. 1911.

The book also deals with administrative measures in regard to scarlet fever, diphtheria, typhoid, smallpox, and public health organization.

The volumes of "The Home University Library of Modern Knowledge" provide, in convenient form and reasonable quantity, reliable handbooks on many subjects of present-day interest, which thoughtful men and women will know how to appreciate.¹ There are two volumes of the series which we would particularly commend to the notice of our readers: "Health and Disease," by Dr. Leslie Mackenzie, the well-known medical member of the Local Government Board for Scotland; and "Crime and Insanity," by Dr. Charles Mercier. The former deals with many problems relating to public and personal health, and furnishes chapters on "The Tuberculous Diathesis" and "The Administrative Control of Tuberculosis"; the latter is a compact and illuminating monograph on conduct and its disorders, describing the nature of insanity and crime, indicating their varieties, and providing data and suggestions for the formation of a reasonable public opinion in regard to practical measures for the care of the insane and the control of the criminal.

DIARIES FOR 1912.

The Diaries for 1912, in utility, novelty, and general attractiveness, have beaten all predecessors. Among the specimens received, special reference must be made to the following excellent forms which are likely to prove of service to our readers:

Thomas de la Rue and Co. provide a splendid series of their "Onoto" Diaries,² varying from waistcoat-pocket size to consulting-room desk form. A £1,000 insurance coupon is issued with each. In size, quality, price, and every other respect all tastes and needs seem to be met.

Walker's "Loose-Leaf" Pocket Diaries are particularly useful remembrancers for doctors and other professional men.³ They are simple and effective, and can be obtained in various sizes, and at prices to suit all pockets.

Charles Letts and Co. supply a number of special forms of diaries and note-books for schoolboys and schoolgirls, scouts, school teachers, and others. We would particularly commend "The Scientists' Reference-Book and Diary," which will be of service to many of our readers,⁴ as it gives a list of scientific societies, associations and institutes, directions for first aid, and many facts and data likely to be of value to scientists and students.

¹ "The Home University Library of Modern Knowledge." Edited by Herbert Fisher, M.A., F.B.A., Professor Gilbert Murray, D.Litt., F.B.A., and Professor J. Arthur Thomson, M.A.; "Health and Disease," by W. Leslie Mackenzie, M.A., M.D., D.P.H., F.R.C.P., Ed. pp. 254; "Crime and Insanity," by Charles Mercier, M.D., F.R.C.P., F.R.C.S. Pp. 254. London: Williams and Norgate. Price: rs. net in cloth; 2s. 6d. net in leather gilt.

² A complete catalogue of the "Onoto" Diaries will be supplied on application to Messrs. Thomas de la Rue and Co., Ltd., 110, Bunhill Row, London, E.C.

³ A special "Medical Loose-Leaf Pocket-Book" is provided for doctors, particulars of which can be obtained from Messrs. John Walker and Co., Ltd., Farringdon House, 5, Warwick Lane, London, E.C.

⁴ "The Scientist's Reference-Book and Diary," with patent self-opening memorandum and £1,000 insurance coupon, price 1s. 6d., can be obtained from Charles Letts and Co., Ltd., Southwark Bridge Buildings, London, S.E., and 3, Royal Exchange, E.C.

The "Wellcome" Photographic Exposure Record and Diary¹ should be in the possession of everyone who "takes photographs." It is of pocket size, is crammed full of information regarding factorial and time development, with machine, tank, or stand, process and contact printing, colour-photography, and with figures and facts invaluable for practical work. An exposure calculator is also provided. The diary pages and register for exposures, negatives, etc., are excellently arranged.

Messrs. Scott and Bowne, Ltd., the well-known manufacturers of "Scott's Emulsion," issue a "Doctor's Diary and Emergency Note-Book,"² which for neatness and utility cannot easily be beaten. The issue for the present year contains a coupon-insurance-ticket, provides data likely to be of service to medical practitioners, and there is a well-arranged diary for the record of engagements. It should also be noted that particulars are given regarding the notifications of tuberculosis, and there is also a good Directory of Sanatoria.

¹ "The 'Wellcome' Photographic Exposure Record and Diary, 1912." is published by Messrs. Burroughs Wellcome and Co., Snowhill, London, E.C. Price 1s.

² "Scott's Emulsion Doctor's Diary and Emergency Note-Book for 1912," Twelfth Year of Issue. London: Scott and Bowne, Ltd., 10 and 11, Stonecutter Street, E.C. A copy is sent free to every medical practitioner on application.

PREPARATIONS AND APPLIANCES.

A NEW SPUTUM FLASK.

TUBERCULOUS sputum undoubtedly is the commonest agent by which tuberculosis is spread. In anti-tuberculosis measures the collection



MARTINDALE'S NEW SPUTUM
SPITTOON.

and disposal of infective sputum is of the first importance. Some form of flask or receptacle in which the expectoration can be gathered and retained until such time as it can be dealt with is an essential equipment for every "open" case of pulmonary tuberculosis. A new form of PORTABLE SPITTOON has recently been introduced by Mr. W. Martindale.¹ Its general form and appearance is indicated in the accompanying illustration. The receptacle is made of polished white metal, and is of a shape suitable for the pocket, and yet convenient for handling. It is said to be entirely of British manufacture. Its appearance is pleasing, and is not likely to arouse such antagonism as is almost invariably shown to

the common form of glass flask. The lid, which is provided with a strong spring, allowing instant opening when the closing attachment is released, is provided with a stout rubber washer, which prevents all danger of leaking. The interior is fitted with a well-shaped funnel, which can be readily removed. In fact, all parts of the flask are so arranged that satisfactory cleaning can readily be arranged for. We believe this form of flask will find favour with many patients, and certainly it is one which may be recommended by physicians with confidence.

THE SPHYGMANOMETER.

In dealing with certain tuberculous patients, especially those who are the subjects of pulmonary tuberculosis, and particularly those who are liable to hæmoptoic attacks, it is very desirable to keep a record of the arterial blood-pressure. Many instruments have been devised for this purpose; but one of the most convenient, accurate, and generally useful for clinical purposes, either in the consulting-room, the hospital,

¹ Martindale's Portable Spittoon is sold at 10s. 6d. each, but special rates for quantities will be quoted on application to Mr. W. Martindale, 10, New Cavendish Street, London, W.

or the sanatorium, is the SPHYGMANOMETER,¹ introduced by Dr. Oscar H. Rogers. Its effectiveness is dependent upon the expansion of a diaphragm chamber, the pressure being exerted upon the inside of the diaphragm. The instrument is unaffected by changes in altitude or atmospheric pressure. The measure of resistance of the chambers is accurately determined, and the dial graduated in centimetres, each centimetre being subdivided into fifths, and these graduations represent two millimetres each. There is no glass-tubing to break, mercury to spill, or other undesirable impedimenta. The instrument is portable, and so convenient in size, weight, and construction, that it can easily be carried in the physician's coat-pocket. It can easily be used, and with a little practice reliable readings can be readily obtained.

THE "SPHERE" HYPODERMIC SYRINGE.

A compact, convenient, and well-made all-metal HYPODERMIC SYRINGE, fitted into a neat metal case specially suited for the pocket, and meeting admirably the general requirements of the medical practitioner, has been introduced by the enterprising publishers of the *Sphere*. At one end of the metal case is a small formalin chamber. The needle can be easily kept in a perfectly aseptic state ready for immediate use in emergencies. One of these excellent little appliances manufactured by the well-known firm of Messrs. Down Brothers, Ltd., should certainly be in the possession of every doctor.²

"SPIROMOL."

In many cases of pulmonary tuberculosis certainly much relief, and in the opinion of some permanent benefit, results from continuous antiseptic inhalation of such medicaments as iodine, carbolic acid, formaldehyde, and creosote, and, where cough is troublesome, spirit of chloroform or ether, is often an addition of value. Under the general designation of "SPIROMOL" a series of preparations have been introduced: No. 1 is according to Dr. Coghill's formula; No. 3, the well-known combination of carbolic acid, creosote, iodine, ether, and chloroform, advised by Dr. Lees; and No. 4 is according to Dr. Muthu's prescription—formaldehyde, chloroform, menthol, and oil of pine. The "Spiromol" solutions are used on a suitable oro-nasal inhaler, which should be worn continuously during the whole of the day and night, except at meal-times. This simple but serviceable form of treatment deserves to be better known, and should be used more extensively than it is.³

¹ Dr. Rogers's Sphygmanometer is supplied in this country by the well-known firm of scientific instrument manufacturers, Messrs. Short and Mason, Ltd., Aneroid Works, Macdonald Road, Walthamstow, London, N.E., from whom full particulars can be obtained on application.

² For particulars as to terms on which the "Sphere" Hypodermic Syringe may be obtained reference should be made to the publishers of the *Sphere*, Great New Street, London, E.C.

³ A list of the "Spiromol" solutions now available can be obtained from Messrs. Allen and Hanburys, Ltd., 7, Vere Street, Cavendish Square, London, W.

TUBERCULINS.

Messrs. Allen and Hanburys provide the various kinds of TUBERCULINS, both for diagnostic and therapeutic purposes, in convenient "Azoule" form, admirably suited for the requirements of sanatorium as well as private practice. A new (the seventh) edition of their useful booklet, "The Tuberculins and their Uses as Diagnostic and Curative Agents," has recently been issued, and will be found of much service for reference.¹ In addition to the information presented in former issues, we find that three new preparations are described: (1) Tuberculin, Albumose-free, a modified form of old tuberculin for use as a diagnostic test; (2) Polygenous Tubercle Bacilli Emulsion, a polyvalent variety of the ordinary tubercle bacilli emulsion for therapeutic administration; and (3) Tuberculosis-Sero-Vaccine, which is made from sensitized tubercle bacilli for use as a curative. The booklet also gives a good coloured frontispiece, illustrating the Von Pirquet reaction.

"ROBOLEINE."

Messrs. Oppenheimer, Son and Company, Ltd., are supplying an admirable preparation under the name of "ROBOLEINE," which, while useful in cases of anæmia, neurasthenia, and in states of convalescence and debility, is of particular value in the treatment of tuberculous affections, both in adults and in children. For cases unable to take cod-liver oil it furnishes an excellent substitute. It consists of "cream of malt," red bone marrow, and the hypophosphites of lime, soda, and potash, so combined as to form an elegant and palatable preparation, which even the most fastidious cannot object to. It produces no digestive disturbance, and it can be given without arousing any sense of nausea. Moreover, the ingredients are readily digested and quickly absorbed, and its beneficial effects as a nutrient of high value is usually speedily indicated by a progressive increase in weight with accompanying general improvement. Those still unacquainted with "Roboleine" will do well to procure samples of this valuable preparation.²

"PNEUMOSAN."

Tuberculosis has been so terrible a foe to human health and happiness that man, in his eagerness to prevent, arrest, and alleviate the malady, particularly when manifested in the form which is commonly designated as "consumption," has sought out many inventions, and at some time or other probably almost every known drug, medical procedure, and climate, have been either employed or suggested. It is little wonder, therefore, that much scepticism now prevails as to the usefulness of any medicaments, the virtues of new procedures or any climatic influences. Such an attitude is neither scientific nor expedient. Indeed, there seems to be no reason why

¹ We are given to understand that Messrs. Allen and Hanburys, Ltd., 7, Vere Street, London, W., and 37, Lombard Street, E.C., will be glad to provide any medical practitioner with a copy of the above booklet.

² Particulars and samples of "Roboleine" can be obtained on application to the manufacturers, Messrs. Oppenheimer, Son and Co., Ltd., 179, Queen Victoria Street, London, E.C.

certain drugs or combinations of medicinal agents should not at least serve as useful adjuvants to the hygienic procedures in which justly main reliance is now placed. Among preparations which have recently been advocated, and concerning the usefulness of which a strong body of clinical evidence has accumulated, "PNEUMOSAN" deserves consideration. It has been introduced by Dr. Cæsare Ballabene, and is said to be an amyl-thio-tri-methylamine compound. It is administered by intra-muscular injection, and, according to those who have had considerable experience in its employment, no ill-effects have resulted, while in many cases patients have manifestly improved. We have examined a number of clinical records of cases of various forms of tuberculosis which have been treated with Pneumosan, and who, in the opinion of their medical attendants, have received both general and local benefits from its administration. Like all other medicaments, this new agent will have to be judged according to scientific standards. Sufficient evidence in its favour, however, has accumulated to make it desirable that it should be submitted to serious and scientifically directed trial.¹

"GUYCOSE."

The claims for "GUYCOSE" that it is of value in tuberculosis, especially, although not exclusively, in the earlier stages of the disease, have received support in a number of publications which have appeared both in Continental and English medical journals. The preparation consists of an 8 per cent. solution of calcium-guaiacol sulphonate in liquid somatose. Rosenbach has expressed the opinion that this guaiacol salt is the most efficient in respiratory disorders. It is certainly non-irritating, and easily borne by weakly patients, while the calcium content seems not unlikely to assist in the healing processes, as pointed out by Sir Lauder Brunton. The somatose factor is undoubtedly important. Somatose consists almost entirely of albumose formed from beef albumen, and it also contains the salts of beef. It has a remarkable effect in stimulating appetite and improving digestion. Accordingly, it is not surprising to find that patients taking the preparation improve in appetite and put on weight—a satisfactory sign in all tuberculous disorders. In the publications dealing with the Guycose in these conditions, one notes that the symptoms are in many cases rapidly relieved, cough lessened, sputum decreased in amount, changed in character from purulent to catarrhal, and that general improvement in health occurs. This preparation of the well-known Bayer Company certainly merits thorough trial.²

"COLLOSOL MERCURY" AND "COLLOSOL SILVER."

A short preliminary notice must be given of the new "Colloid" preparations which are being introduced by Messrs. Oppenheimer, Son and Co., and which promise to be of service in the treatment

¹ "Pneumosan" is supplied by the Pneumosan Chemische Fabrik. London Office: 157, Great Portland Street, W., from whence full particulars will be supplied on application. A booklet of clinical reports has recently been issued. See also "Report on a Number of Cases treated with Pneumosan," by John Penn Milton, M.R.C.S., L.R.C.P., Medical Superintendent, Devon and Cornwall Sanatorium.

² The Bayer Co., Ltd., 19, St. Dunstan Hill, London, E.C., will send particulars on application.

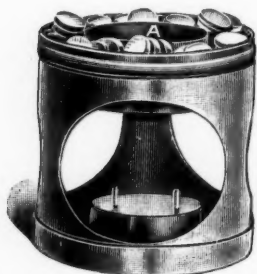
of tuberculosis. Extensive experiments have for some time been conducted in the Crookes Laboratories with the new preparations of "COLLOSOL MERCURY" and "COLLOSOL SILVER," proving that they are stable towards electrolytes, heat, and the influence of organisms for all reasonable requirements. They possess important germicidal properties, and their use in the treatment of tuberculosis is now being investigated.¹

ANTI-CORYZA WOOL.

An improved means for applying menthol and formaldehyde in the state of vapour to the nasal passages has been rendered available by the introduction of ANTI-CORYZA WOOL.² A pledget of this wool placed in each nostril serves as a filter and also as a medicated inhaler. It should prove of considerable service as a useful prophylactic and also as a helpful therapeutic agent in such affections as nasal catarrh, infectious coryza, hay fever, influenza, etc. For some cases of chronic rhinitis this preparation will be alleviative.

THE "FORMALIDE" FUMIGATOR.

It is customary in many sanatoria periodically to disinfect the apartments used by consumptive cases. In dealing with rooms used



SHARRATT'S "FORMALIDE"
FUMIGATOR.

by advanced cases, especially when such are bedrooms and living rooms shared by other people, some means for conducting speedy, inexpensive, and yet effective, disinfection is essential. The public health authority as well as the private practitioner will find the "FORMALIDE" FUMIGATOR a useful contrivance for disinfecting rooms used by consumptive and other infectious cases. Its general form is indicated in the accompanying figure.³ As will be seen, it is of very simple construction. It consists of a receptacle for water and a chamber containing 30 grains of "Formalide" tablets. The latter, in presence of the watery vapour, are converted into formic aldehyde, sufficient being liberated to fumigate

a room of from 1,000 to 1,200 cubic feet. As a fumigator is only used once, it will be seen that those conducting the disinfecting process have not to pay a second visit for the purpose of collecting apparatus, so saving time, labour, and money. To use the appliance, the lid is removed, and the candle placed in position beneath the humifying chamber (which has been filled with water) and the space containing

¹ Full particulars regarding these new preparations may be obtained on application to Messrs. Oppenheimer, Son and Co., 179, Queen Victoria Street, London, E.C.

² Anti-Coryza Wool is supplied by Messrs. Allen and Hanburys, Ltd., 7, Vere Street, London, W., and Plough Court, Lombard Street, E.C., in tins price 1s. each.

³ For full particulars concerning the "Formalide" Fumigator (the cost of which is 7s. 6d. per dozen, or 84s. per gross, carriage paid), application should be made to the manufacturers, the executors of the late William Sharratt, Tower Works, Clayton, Manchester.

the "Formalide" tablets. The Fumigator, when the wicks are lit, is placed on a saucer, and the room sealed and left closed for six hours.

THE "AUTOTHERM."

For travellers, sportsmen, and others in the full enjoyment of vigorous health, an "AUTOTHERM" is a luxury; but for invalids and many subjects of disease an "Autotherm" may be allowed to rank with life's necessities. For consumptives and other tuberculous patients undergoing open-air treatment one of these ingenious contrivances will be of the greatest value. The "Autotherm" is one of the best of the new vacuum flasks whereby hot fluids can for twenty-four hours or more be kept at a relatively high temperature. For patients undergoing outdoor treatment, or compelled to undertake a long journey to Switzerland or elsewhere, the advantages of such a contrivance requires no demonstration. It should be noted also that the same vacuum bottle will serve during the hot days of summer to keep milk or other drinks cold and sweet, a great advantage for consumptives and many other invalids. The "Autotherm" is of excellent workmanship, strong, efficient, durable, and it can now be obtained in a number of shapes and sizes.¹

A PORTABLE GLASS RACK.

Those responsible for the management of a hospital sanatorium or other public institution know well what a constant expense arises from the breaking of crockery. Even in a private house the loss from this source is by no means inconsiderable. Much of the destruction is certainly preventable, but in very few kitchens and sculleries are there adequate provisions for the safeguarding of glass and china goods. The "EASY" PATENT DRAINER AND TRAY, however, goes far to supply what without exaggeration may be designated "a long-felt need." It is a strong, simple, portable, inexpensive, but thoroughly effective, appliance, which only requires to be known to be appreciated.² It should speedily replace the old-fashioned, clumsy, and insanitary plate-rack common in so many otherwise well-ordered establishments. The tray is devised to secure the quick drying of plates; inverted, it forms a reliable rack for cups and the like. It is intended to be used upon a draining-board, but where one is not available a tin tray is supplied. Having thoroughly tested this ingenious invention, we can strongly recommend it.

FOOT-RESTS.

Messrs. J. Harris and Sons have introduced a form of FOOT-STOOL which will prove of great service to many tuberculous patients and other invalids. It may also be noted that it provides a justifiable

¹ Full particulars regarding the "Autotherm" can be obtained from Mr. H. W. Kochler, the English agent, 10, Wood Street Square, London, E.C.

² Full particulars and illustrations of the "Easy" Patent Drainer and Tray can be obtained from the inventors, Messrs. Frank Staines and Co., Ltd., 88, Victoria Street, London, S.W.

luxury even for the healthy. These foot-stools are excellent in design, strong in construction, sanitary, and inexpensive. Each is provided with a detachable linen cover, which can be embroidered according to taste. The size of the stool is $12\frac{1}{4}$ inches wide; from back to front, 11 inches; and the height $5\frac{1}{4}$ inches. The wood frames can be obtained separately and the linen covers can be bought ready traced for working. Medical superintendents of sanatoria would do well to let their lady patients embroider their own stools. It would provide many with an agreeable form of work, and the finished stool would be a welcome addition to the comforts of sanatorium life.¹ These sanitary stools should gain an entrance to every home. They will also be of use as foot-rests for those using motor-cars. We can imagine no more artistic and acceptable form of present for an invalid, or indeed for anyone.

¹ The above-described foot-stool can be obtained complete, with detachable embroidered cover, price 13s. 6d. Full particulars will be supplied on application to Messrs. J. Harris and Sons, Ltd., Derwent Mills, Cockermouth. Our readers would do well to send for a copy of the illustrated booklet, "From Fell-side to Fire-side," issued by this firm, price 6d. net.

NOTES.

RETROSPECT AND ANTICIPATIONS.

THE BRITISH JOURNAL OF TUBERCULOSIS first appeared in January, 1907. With the present number begins Vol. VI. It is the only journal published in this country which is devoted solely to tuberculosis. During the past five years the JOURNAL has steadily striven for the co-ordination of all forms of anti-tuberculosis effort, and has sought to secure the co-operation of all sorts and conditions of men and women engaged in the Anti-Tuberculosis Movement. It has now an influential circulation in this country and in our Dominions Overseas, and also in America, and is not unknown in other countries. Articles have appeared in the pages of the JOURNAL from contributors in all parts of the world. The JOURNAL does not seek to advocate the claims of any particular association, or crave support for any special institution. Its aim is to provide an independent organ for the presentation of matters relating to the medico-sociological study of the tuberculosis problem, and to secure a scientific record of thought and action making for the prevention and arrest of tuberculosis in all its forms. During the last few years great strides have been made. The general public have been instructed, and support is now being eagerly given to rational measures aiming at the extermination of this greatest of scourges. Numerous scientific investigations have paved the way for further advance. Clinical opportunities for the more precise study of the disease in its protean manifestations have been provided, and new methods for the early recognition of tuberculous disease have been introduced. Measures directed to secure a more rational, and consequently a more effective, anti-tuberculosis campaign are being adopted both by voluntary effort and national service. And now, with the coming of the National Insurance Act, there is provided for the first time in this country a systematized State enterprise which is definitely intended to secure remedial and ameliorative treatment for those necessitous workers who have been smitten with the fell disease. Since Koch's epoch-making announcement before the Physiological Society of Berlin on the evening of March 24, 1882, of his discovery of the tubercle bacillus, we have travelled far and fast, and, with the broadening of thought and the widening of action, advancement may be expected to continue at an ever-increasing pace, until the time arrives when tuberculosis shall be, if not exterminated, at least a tyrant in bonds.

THE NOTIFICATION OF PULMONARY TUBERCULOSIS.

In any serious and systematic endeavour to deal with tuberculosis some method for the recognition and registration of the centres of disease is essential. Directly the infectious character of tuberculosis was established, the reasonableness and logical necessity for this step was admitted by those best able to foresee the lines along which the Anti-Tuberculosis Campaign was to be conducted. But it has only been by slow and cautious steps that advance has been made. Voluntary notification in England was adopted in 1899. Compulsory notification

was next permitted in a few of our larger provincial centres; Sheffield was provided with powers in a special Act passed in 1904, and some other towns, notably Bolton and Edinburgh, followed soon after. In 1908 notification was made compulsory in the case of Poor Law patients, and early in 1911 a like requirement was extended to patients in the public hospitals of London. At last an order issued by the Local Government Board makes compulsory the notification of all cases of pulmonary tuberculosis. Thus with the beginning of 1912 we begin the attack on tuberculosis at what may logically and scientifically be designated the beginning. It is to be hoped that all will loyally unite in securing the proper carrying out of this necessary, and indeed fundamental, procedure in a well and wisely ordered attack upon the common foe.

A SIMPLE FACE-MASK.

Whatever views may be held as to the contentions of Flügge and others regarding the dissemination of tubercle bacilli in the fine particles of sputum ejected from the mouth of consumptives in the act of coughing and loud talking, it cannot be denied that there are some cases of tuberculosis of the larynx and fauces where the physician is wise to adopt such a simple, prophylactic measure as is indicated in the



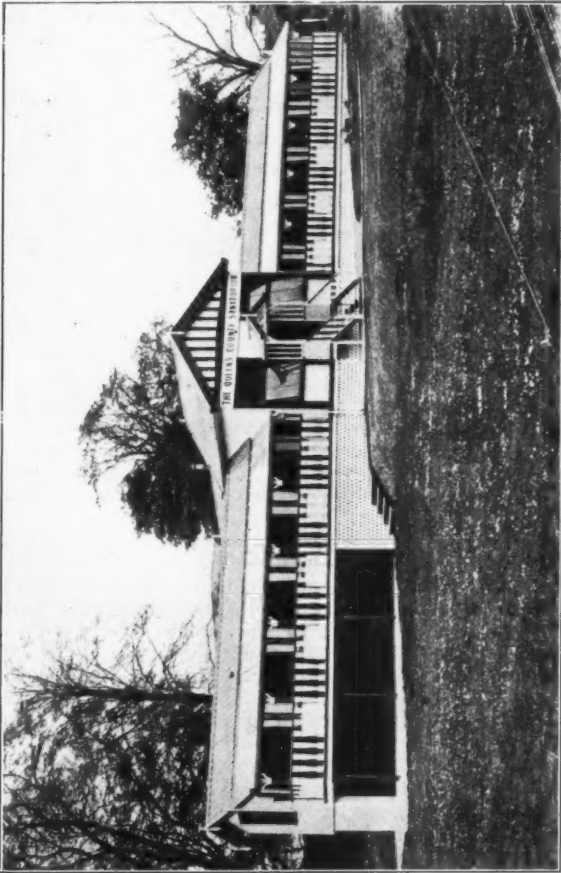
A FACE-MASK FOR USE WHEN EXAMINING CONSUMPTIVES.

accompanying figure, which we are able to reproduce through the courtesy of the editor of the *British Journal of Nursing*. Not only does the use of a simple face-mask go some way to protect the examining doctor or nurse, but it exercises an educational effect on the patient. The mask is made of gauze, medicated or otherwise, or of Japanese crêpe. It is held in place before the mouth and nose by means of

loops made of spool wire. In some institutions nurses, when dealing with "open" tuberculous patients, especially advanced consumptive cases, wear mouth-masks, made of several thicknesses of gauze, 3 inches wide by 6 inches long, with tape attachments. The mask can be moistened with weak disinfectant, and tied over the mouth and nose.

THE QUEEN'S COUNTY SANATORIUM, MARYBOROUGH.

Through the indefatigable energy and far-seeing wisdom of Lady Coote of Ballyfin a sanatorium has been established at Maryborough,



THE QUEEN'S COUNTY SANATORIUM, MARYBOROUGH, QUEEN'S COUNTY, IRELAND.

and is known as the "Queen's County Sanatorium." The institution was opened in the spring of 1911 by their Excellencies the Lord-Lieutenant and the Countess of Aberdeen. The buildings were erected by Messrs. Kennan and Son, of Dublin, and the cost of the sanatorium, equipped

and furnished, was £1,150. It contains twelve beds—six for men, and six for women. The sanatorium is maintained and governed by the Board of Management of the County Infirmary, on whose grounds it stands. The first report has just been issued, and copies may be obtained on application to Lady Coote.

PATHS OF PROGRESS.

Dr. J. J. Perkins, the Hon. Secretary of the National Association for the Prevention of Consumption (Offices, 20, Hanover Square, London, W.), has asked us to insert the following announcement, which we do with pleasure:

"The Association is actively engaged in forming a library and bureau for the collection of all matters relating to pulmonary tuberculosis from every point of view and in all countries. It is intended that such information shall be available not only to members of the medical profession, but to the public at large. Valuable assistance would be rendered if Medical Officers of Health, School Medical Officers, and Medical Superintendents or Secretaries of Hospitals, Sanatoria, Tuberculosis Dispensaries, and Open-Air Schools, would kindly place the Association on their distribution list in respect of annual reports or other documents bearing on the question of consumption. Books, pamphlets, and reprints of articles from physicians and social workers in general would also be gladly received."

An effective, well-administered, representative Tuberculosis Bureau has long been a much-needed requisite in the Anti-Tuberculosis Campaign of this country. We trust such will be established on thoroughly democratic lines, and open to all classes, irrespective of profession or social status. A centre somewhat similar to that which has proved so valuable a feature of the Anti-Tuberculosis Movement in Sweden is sadly required in this country. In Stockholm some years since a fine shop was taken in one of the principal streets and opened to the public, and here at appointed times leading medical practitioners of the city gave demonstrations and conducted discussions. We hope the National Association for the Prevention of Consumption is about to start work on similar lines, and will be able to provide in a convenient and conspicuous centre in London, a permanent Exhibition, Reference Library, and Inquiry Bureau dealing with all forms of tuberculosis.

The proprietors of *The Medical Officer* are publishing in handbill and poster form the striking illustrated placard which has proved so effective in the service of the Chicago City Health Department. The cartoon is designed, "Which Way are you Going?" and provides in a double series of pictures the answers, "To Good Health and Long Life," and "To Consumption and Early Death." Our readers will do well to procure specimens of these instructive cartoons.¹

As a memorial to the late Sir William Crook, a new sanatorium is being erected on Romsley Hill, between the Clent Hills and the Lickey, for Birmingham consumptives. The plans have been prepared by

¹ Full particulars may be obtained on application to the publishers of *The Medical Officer*, 36-38, Whitefriars Street, London, E.C.

Mr. F. W. Martin. It is estimated that the total outlay will be £14,500.¹

The Report of the Royal Commission of the Province of Quebec is a valuable document which all serious students of the tuberculosis problem should study.² It is a clear statement of the case, and furnishes much information regarding causal factors and prophylactic measures and procedures for dealing with the scourge. An interesting account of Dr. R. W. Philip's "Edinburgh Scheme" is given in succinct form. There are also suggestive sections on the protection of children.

Dr. Theodore B. Sachs, the Medical Director of the Edward Sanatorium, has just issued an illustrated report which gives much valuable information regarding sanatorium régime, and interesting data relating to the sanatorium movement in the State of Illinois.³

The official *Bulletin of the Johns Hopkins Hospital* has recently devoted the greater part of a number to a consideration of the life and work of Robert Koch.⁴ Appreciative articles appear from the pen of Dr. William W. Ford, Professor S. Adolphus Knopf and a good portrait of Koch is given.

The Final Report of the Royal Commission on Tuberculosis has just been issued, but cannot be considered satisfactory or convincing.⁵ As bearing on the experimental study of tuberculosis in animals, the valuable report on recent investigations by Dr. R. A. O'Brien merits careful consideration.⁶

Under the direction of the Welsh National Memorial to King Edward VII., which has taken the admirable form of a wisely conducted crusade against consumption, valuable information is being provided for the people in the shape of cheap and attractive literature. We particularly commend the excellent "Tuberculosis Catechism and Primer for School Children," issued for one halfpenny, and the "Hand-book on Consumption" for a penny.⁷

Under the auspices of the Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W., an Exhibition, illustrating the Materials and Methods of Construction of Economical Forms of Sanatoria Schools, Hospitals, and other Temporary Buildings, will be held during January, 1912. In connection with the Exhibition the following

¹ An illustration and description of the new sanatorium appears in *The Birmingham Medical Review* for November, 1911, and full particulars may be obtained on application to Mr. W. S. Aston, one of the Hon. Secretaries, at 45, Newhall Street, Birmingham.

² Report of the Royal Commission on Tuberculosis for the Province of Quebec, 1909-1910.

³ "The Work of the Edward Sanatorium: An Institution for the Treatment of Incipient Pulmonary Tuberculosis, Naperville, Illinois."

⁴ *Bulletin of the Johns Hopkins Hospital*, vol. xxii., No. 250, December, 1911. Baltimore: Lord Baltimore Press. Price 25 cents.

⁵ The Final Report of the Royal Commission into the Relations of Human and Animal Tuberculosis. (Part II., Appendix V.: Comparative Histological and Bacteriological Investigations.) By Dr. Arthur Eastwood [Cd. 5975].

⁶ "Non-Tubercular Mortality among Guinea-Pigs." Report to the London County Council, by Dr. R. A. O'Brien. Pp. 9 with charts. London: P. S. King and Son. 1911. Price 3d.

⁷ The above booklets and full particulars of the Anti-Tuberculosis Movement in Wales can be obtained on application to the Memorial Offices, Newtown, Mid-Wales.

Lectures have been arranged: Monday, January 15, at 7.30 p.m.: "Fresh Air" (illustrated by lantern slides), by Professor Henry Kenwood, M.B., D.P.H., F.R.S.E. Friday, January 19, at 4 p.m.: "Problem of After-Care of Sanatoria Patients," by T. D. Lister, M.D., B.S., F.R.C.S. Wednesday, January 24, at 4 p.m.: "Employment of Patients in Sanatoria," by M. S. Paterson, M.B., B.S., M.R.C.S.; 4.30 p.m.: "Anti-Tuberculosis Dispensaries," by D. J. Williamson, M.D. Friday, January 26, at 7.30 p.m.: "Open-Air Schools" (illustrated by lantern slides), by Professor Ralph P. Williams, M.D., B.S., D.P.H.

The Seventh International Congress on Tuberculosis, postponed from the autumn of last year, will be held in Rome, April 14 to 20, 1912. Full particulars may be obtained on application to the Secretary of the Congress, 36, Via in Lucina, Rome. We hope to publish a programme of the proceedings in our next issue.